



FRIDAY, SEPTEMBER 24.

Contribution.

A Fast Run on the Chicago & Atlantic.

HUNTINGTON, Ind., Sept. 13, 1886.

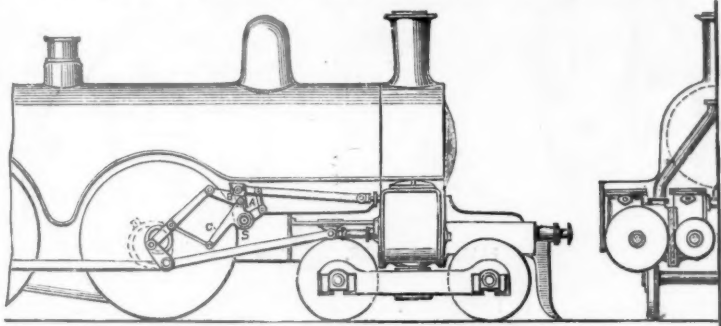
TO THE EDITOR OF THE RAILROAD GAZETTE:

Inclosed I hand you a schedule of time made over this road which explains itself, and in my opinion it is worthy of going on record.

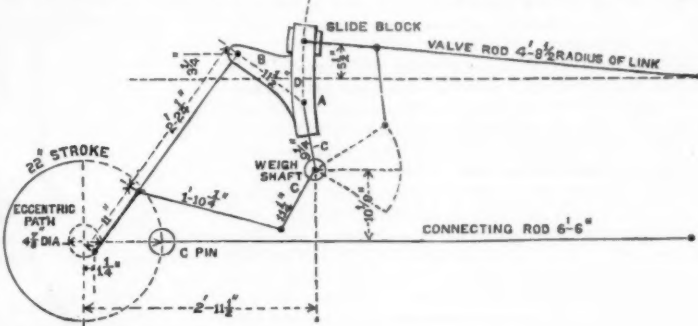
While there are instances of fast time made with only one or not over two cars, this is a case of a regular train, consisting of six cars. The train was received from the connecting road, 90 minutes late, and running that much late on schedule time the connection at the west end of the road could not be made. As it was important to make the connection, the engineers were instructed to make up enough time to insure the connection being made, which was done. The engines making this run have 17 by 24 in. cylinders, 66 in. fire-boxes ; total weight of engine, 73,000 lbs. ; weight on drivers, 47,000 lbs.

JACOB JOHANN, Master Mechanic.

Schedule of run on Chicago & Atlantic Railroad between Marion and Chicago, 269 miles, by train 5, consisting of 6 cars, 1 ex-



SWAN'S UNIVERSAL VALVE GEAR



press, 1 baggage, 2 coaches, 1 sleeper, 1 officer's car, 17 x 24
American engine, Sept. 1, 1886.

[illegible]

The May's Landing Catastrophe—Correction.

Philadelphia & Reading Railroad Company.
PHILADELPHIA, Sept. 17, 1886.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I beg leave to call your attention to an error in your edi-

torial, "The Silver Creek Catastrophe," in the issue of the *Railroad Gazette* of even date, and to say that the accident referred to by you, of Aug. 11, 1880, at May's Landing, N. J., did not occur on the "Philadelphia & Atlantic," the road operated by this company, May's Landing not being on the line of our road. This accident occurred on one of the other lines running between Camden and Atlantic City. I would be pleased to have you correct this, so far as we are concerned, in whatever shape you may deem proper.

C. G. HANCOCK,
General Passenger and Ticket Agent.

[The accident occurred on the West Jersey & Atlantic, not the Philadelphia & Atlantic City.—EDITOR RAILROAD GAZETTE.]

Swan's Universal Valve Gear.

The accompanying illustrations show a form of valve gear patented by Mr. Thomas Swan, of Jarrow-on-Tyne, England, and exhibited at the Edinburgh International Exhibition. It is applicable to stationary and marine engines, and the valves can be placed either alongside or above or below the cylinders. Our illustration shows the gear applied to a compound locomotive having four cylinders, two high-pressure and two low-pressure, applied side by side. We are indebted to the *Engineer* for the following description of the gear :

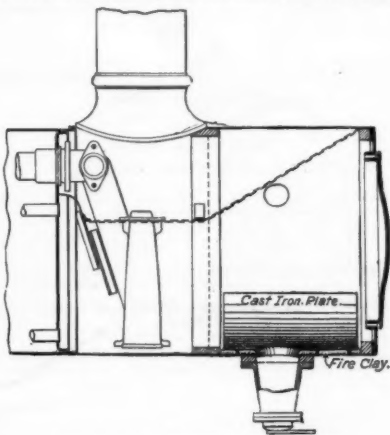
"The gear may be fitted to work in any position from one eccentric, or it can work from the main connecting-rod or crank. The motion of the valve-spindle is the resultant of

for inside cylinders. In this case, as before, the lap-level is arranged to travel the lap and lead when the piston is at the end; but in order to obtain this, extra travel is required at each end, owing to the angular position of eccentric-rod to the side, as shown, and because the centre of attachment of the lap-level link is nearer one end of the link than the other. The angular setting of the parts, etc., in this modification makes it more difficult to arrive at the exact proportion, and for this reason dimensions are given with fig. 3, which will enable the motion to be tested by cardboard strips or other convenient means. In another arrangement for locomotives, the fulcrum rod *F* is made shorter, to suit inside cylinders. The eccentric-rod itself will perform the functions of the lap-level. The link *A* oscillates in the fixed guide, as will be understood. The eccentric is coincident with the crank, and *D* equal half the lap and lead."

The gear appears to be simple, and is free from the most important objections found in the working of the Joy and other analogous forms of valve motion which dispense with eccentrics. In the Swan gear the strain of working the valves passes through pins and not through a sliding block having a considerable range of motion during each stroke. The friction and wear ought therefore to be moderate in amount.

Another point in favor of the Swan gear is that the motion of any part is not very great. Many advantages are gained by dispensing with eccentrics and working from the cross-head or connecting-rod, but in a quick-running engine like a locomotive, the speed of the working parts is apt to be excessive, and the effect of inertia and momentum sets up a series of strains that are distinct from those caused by the work proper to the valve gear, the movement of the valve.

two motions—one giving the travel necessary for the opening and shutting of the ports, the other an amount equal to twice the lap. Both motions are got from one eccentric, its circular motion being brought up as it were, into two linear components at right angles. By means of one of these components a link like that of the ordinary link motion, is oscillated round a point at or near its centre, while that point is itself moved by the other component in the same direction as the valve spindle. The motion of the link is transferred to the valve spindle by a connecting-rod, whose link end can be moved to any position by a weigh-shaft, as in the common link-motion. By moving the end of the connecting-rod nearer the middle of the link an earlier cut-off may be obtained, one advantage for the gear being, that the opening of the port always takes place at the same time, whatever degree of expansion may be used. Another important advantage which the gear appears to possess is that at the points of opening and cut-off the two component motions described are acting together in the one direction, consequently giving a quick opening and cut-off. On the other hand, when the port is full open the component motions are acting in opposite directions, and thus the valve is kept nearly stationary for some time. Stopping and reversing will be done as in ordinary link motion, by moving the end of



Henderson's Improved Smoke-Box.

the valve spindle, connecting-rod into the middle, opposite end of the link. The lever, which gives lap and lead travel to the valve is freely centred on the reversing weigh-shaft, which has reversing levers, keyed on in the usual manner. In this case, however, the eccentric-rod is placed so that its point of attachment with the link shall have traveled the lap and lead—same as lap-lever alluded to—when the crank is at the top and bottom. By fixing an arm from the eccentric-rod end to the link and making the necessary adjustment of the eccentric centre, the gear can be applied when the valves are on the side of the cylinders in place of on the end. *A* is the reversing link, *B* the arm on the link, *C* the lap-lever, *D* the half lap + lead; *S*, the reversing weigh-shaft, to which all the valve gears are attached, the shaft being carried on the top of the main bearing frames, as is also the connecting-rod. The lower end of the lap-lever in this case is worked from the eccentric strap. The parts are accessible while the engines are running, and there are no overhung bearings. The eccentric centre is coincident with the crank, so that the principle may be used to work off the main crank or the connecting-rod with modifications of the levers.

"Figs. 1, 2 and 3 illustrate the application of the gear to a compound locomotive having four cylinders abreast; the gear for outside cylinders being worked from an overhung crank with the same centre and travel as the two eccentrics

and cause at high speed springing and excessive wear, causing the motion to speedily become loose and rattle, thus giving a bad distribution of steam and leading to occasional breakdowns on the road. For this reason valve gears worked from the connecting-rods have been very successful on marine engines running at 60 or 70 revolutions, but have given some trouble on locomotives when run at four times that speed. In several cases within our knowledge, valve gear worked from the connecting-rod had done well on locomotives run at an ordinary speed, but failed when the same engines were placed on a run where a steep and tolerably straight down grade gave a favorable opportunity for a very high speed. The valve gear sprung so much that the clearance, ample at an ordinary speed, proved insufficient at a very high speed, and several breakdowns were the consequence. Mr. Swan's gear has not yet, we understand, been tried on a locomotive, but it appears to promise well and to be free from many of the objections which belong to many of the so-called "radial valve-gears" now in vogue.

Henderson's Improved Smoke-Box.

The improvement in locomotive smoke-boxes shown on the accompanying engraving was patented by Geo. R. Henderson, of Altoona, Pa., Oct. 20, and is now standard on the Pennsylvania Railroad. It has for its object the perfection of the sheet of the smoke-box extension from the hot coal and cinders which collect in it. In bituminous coal-burning engines much coal is carried forward by the blast and ignites in the smoke-box, frequently heating them red hot, which in time destroys the bottom of the box, necessitating patching. This is prevented in Mr. Henderson's device by having in the bottom of the smoke-box a cast-iron plate, curved to suit, and separated from the sheet by a layer of fire-clay or similar substance. The plate prevents the fire-clay from being disturbed in cleaning out the front end, and the clay itself prevents the transmission of heat. The inventor informs us that the device has been in use on the Pennsylvania Railroad for over a year, giving perfect satisfaction. At the present time about 500 engines on that road are equipped with it, and this number is being increased as rapidly as possible.

The Five Freight Train Brakes.

We publish on an inset sheet in this week's issue perspective views taken from photographs of each of the five freight brakes tested at Burlington, three of them buffer brakes and two of them air brakes. We gave detail drawings of the buffer brake which came out from the test most successfully, the American brake, in our issue of Feb. 19, 1886. The Westinghouse brake, in its various details, we have many times illustrated in our columns, and add now engravings showing in plan the methods used of fitting up freight cars, and in section the combined triple-valve, auxiliary reservoir and brake cylinder designed especially for and permitted to be used only on freight cars.

For the Eames brake we give drawings of the ejector, diaphragm and hose coupling, to which we shall shortly add engravings of the ingenious automatic valve, corresponding in its functions and action to the Westinghouse triple valve. With these details added, the perspective views will enable

the mechanism of each brake to be as completely followed as is likely to be desired.

The American brake has a centrifugal governor on the axle which at a certain fixed speed ($11\frac{1}{2}$ to 12 miles per hour) moves the forked lever surrounding the axle horizontally, and this, through mechanism easily followed in the engraving, throws a "push-bar," not visible in the engraving, in or out of gear, so as to make the brake operative or inoperative.

Except for this disengaging gear, the American brake apparatus is of the last degree of simplicity, consisting of nothing more than the large bent "pendent lever" readily seen in the engraving, the upper arm of which (not visible) bears against the end of the draw-bar, while the lower arm pulls directly on the brake rod. The "push-bar," which the centrifugal governor raises and lowers, is merely a hinged extension of the upper arm of this lever.

The Rote brake has an axle mechanism similar to that of the American, and most of its visible parts are for a similar purpose. When the brake is in gear, the draw-bar bears against the short arm of a horizontal brake lever, to the long arm of which the brake rod is attached, but not directly, as in the American, but by a swiveling piece hung at its centre on the end of the brake-lever. As the latter moves, the upper end of this swiveling piece hits against a fixed wiper, and so—by a very neat, if not wholly new device—makes a quarter turn backward at the lower end till it is horizontal and on a "dead-centre" relatively to the brake-rod and brake-lever, thus taking up a lot of slack without losing power. But experience with the American brake indicates that no device of this kind is necessary, and it would appear to require tolerably nice adjustment of the slack for its best effect.

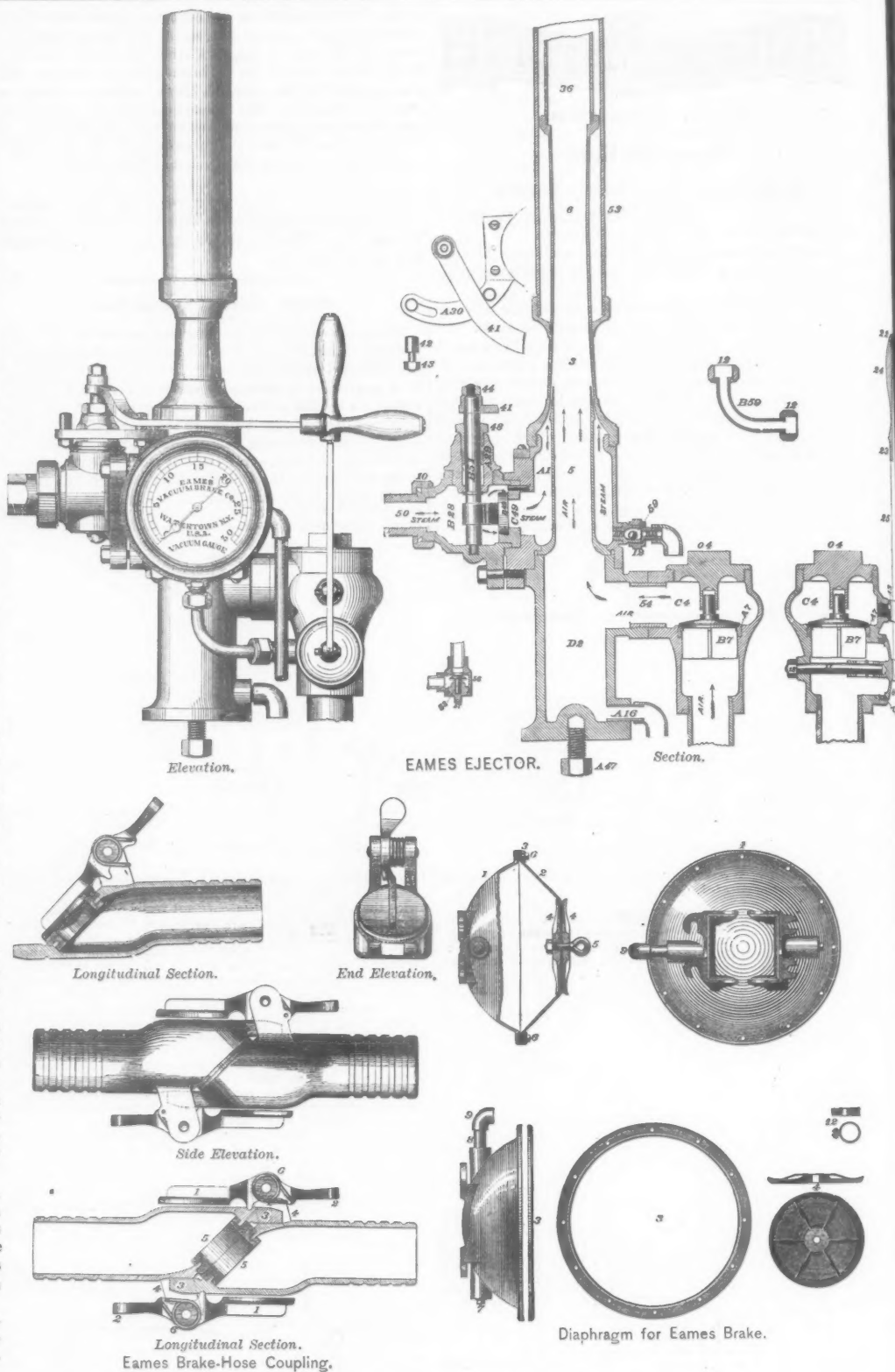
The Widdifield & Button has a small shaft parallel with the axle, one end of which is carried in a fixed bearing, and the other in a lever actuated by the draw-bar. On the end of the shaft near the movable bearing is a large friction pulley, which bears against a combined wood and paper spool on the axle. On the other end of the shaft is the brake-chain spool, and beyond that again a ratchet, which causes the spool to turn with the shaft in one direction only. This ratchet must, therefore, be set to work according to the direction the train is moving, which is very readily and quickly done from either the top or side of the car by a handle, which is not visible. The same motion of the handle sets the rod and chain which move up the friction-shaft, so that they also will work only when going forward.

Two rods will be seen connected with the chain by which the friction wheel is thrown into gear. One of these (the least visible one) is fixed. The other one is moved by the draw-bar. The chain is shown a little displaced, as explained on the large plate.

The details of the Widdifield apparatus have been very neatly and well worked out, and the difficulties with it, as with the American, are not at all with its anatomy, so to speak, but with its physiology, or behavior when working. It produced more violent shocks than the American, but this may well have been largely due to the available motion of the draw-bars being limited to about half an inch by the enormous wooden dead-blocks on the Lehigh Valley cars. The brake, at least, does away with a serious difficulty with the direct buffer type, that the amount of pressure is uncontrollable. The friction wheels will not permit more than a certain nearly constant tension, whatever the pressure of the draw-bar.

The Westinghouse apparatus has been described too often, and its principle is too well known, to need much description beyond the engravings. The inverted plan will show that the brake-gear as a whole is very neatly arranged. The train-pipe pressure the Westinghouse Company recommends is 65 lbs., giving about 50 lbs. in the brake cylinder, which is 8 in. diameter. The packing, 7, is leather.

The Eames automatic vacuum has a single auxiliary reservoir under the car, which is naturally several times larger than the Westinghouse (about double the size in each dimen-



INVERTED PLAN WESTINGHOUSE AUTOMATIC FREIGHT BRAKE.

COMBINED TRIPLE-VALVE, RESERVOIR AND BRAKE CYLINDER—WESTINGHOUSE FREIGHT BRAKE.

sion, or more, as the pressures dealt with are so much less, being from 15 to 22 in. of vacuum, or $7\frac{1}{2}$ to 11 lbs. per square inch. The automatic valve, or Eames "triple valve," is seen just beyond the auxiliary reservoir which supplies a brake-pipe which runs to a separate diaphragm on each truck. The freight diaphragms are 14 in. or 15 in. internal diameter, the front of the diaphragm shell being collapsible rubber.

The Eames coupling is for $1\frac{1}{2}$ in. hose, from which the scale of the drawings (which was not given to us exactly) can be approximately seen. It is much simpler than the Westinghouse, but also more readily disengaged by accident. The ejector for freight service is not exactly like our engraving,

it, but it will be seen that the "circumstantial evidence" that it was so is painfully strong.

The collision, regarded simply as a collision, was a decidedly mild one. On the engines, one cylinder and a part of the steam chest of one engine was knocked off and the cylinder-head of the other engine, but the collision was not violent enough to do any injury to the boilers, thus saving the horrible addition to the death-roll from escaping steam which has so frequently resulted in such accidents. The manner in which the cab and tank are fractured likewise indicates no very extraordinary violence.

We may be quite certain that with a train of well-built

can be only too well pictured. According to the latest reports, out of 40 in the car 14 were killed, 19 injured and 7 escaped uninjured. One cannot help wondering that so clean a cut, with so little general fracture, should have been possible both on the sides and roof, but probably the strongest car would shear almost as easily, granting the provoking cause to start the telescoping. It is in that that the moral of the occurrence lies from a mechanical point of view.

Meeting of the Freight Train Brake Committee.

A joint meeting of the brake committee of the Master Car-Builders' Association and of representatives of the several brake companies who participated in the July tests at Burlington, was held in New York, Sept. 16, 1886. Present, Messrs. G. W. Rhodes, Chairman, and Jno. S. Lentz, of the committee; Jno. B. Gray, Geo. H. Poor, American Brake Co.; J. H. Slade, A. P. Massey, Eames; T. W. Welch, H. H. Westinghouse, Westinghouse; W. P. Widdifield, Widdifield & Button; R. M. Agnew, Rote; A. M. Wellington, Railroad Gazette, Referee, and J. M. Bailey, Railroad Gazette.

After two or three hours informal discussion the following resolutions were unanimously adopted:

- 1st. *Resolved*, That in view of certain changes being desired in the brakes tested at Burlington, the proposed endurance test following the first series of brake tests be abandoned.
2. That each of the late competitors at Burlington be allowed the privilege of entering the tests of April, 1887, with their brake gear modified in any manner they deem best suited to show its highest efficiency.
3. That any additional competitor who may be desirous of entering the 1887 or final tests with a train of 50 cars in conformity to the rules and conditions which may be established at the discretion of the Committee, be admitted to the competition.

4. That a programme for the 1887 tests and a following endurance test shall be drawn up by the committee, with discretion to modify the same from time to time as may appear necessary to bring out all important points of each brake with least loss of time.

The Chairman stated that for the information of those present a joint meeting to consider the new tests would be called some time during the month of February, 1887.

In the discussion that followed, the sense of the meeting seemed to favor close instead of slack couplings.

Mr. Slade suggested that as two months before the test might be a little too close to the tests to change equipment, it would be better for the committee to state now whether close or loose couplings would be prescribed, in view of their experience at Burlington.

Mr. Rhodes: I don't know whether all the brake companies will care to use close couplings; further we should not name any particular coupler. If any company wants to use a wedge instead, let them do so.

Mr. Lentz moved that close couplings be used, and that companies coming with link couplings be required to use a wedge. Seconded by Mr. Slade, and carried.

Mr. H. H. Westinghouse offered the following resolution, seconded by Mr. Slade, and carried:

Resolved, That in view of all the expenses of the brake tests for 1886 having been borne by the Chicago, Burlington & Quincy Railroad Co., the expenses of the 1887 tests shall be borne by the brake companies in such proportion as may be fixed by the committee.

The American Project for Persian Railroads.

The American speculator who has obtained the concession from the Shah for the construction of a network of railways in Persia, would appear to mean business, after all. The concession, which he obtained while acting at Teheran as Minister-Resident of the United States, he has conveyed to St. Petersburg, and offered to carry out under the direct auspices of the Russian government. British diplomacy at Teheran is reported to be much exercised by this act; and, if we are not mistaken, influence is being brought to bear upon the Shah to induce him to clip the wings of the concession, if Mr. Winston realizes his present aim of transferring it to Russia for a cash consideration. England has acquiesced in a good many Russian movements lately, but we question whether she would regard with indifference the extension of the Russian railway system from the Caucasus to the Persian Gulf. This is what the American proposes to do; and as, by the terms of his 99 years' concession, he obtains mile-plots of land each side of the line through the richest provinces of Persia—those bordering upon the Caspian Sea—the initial section, from the shores of that sea to Teheran, is almost sure to pay. Afterward it is proposed to carry one line south to the Persian Gulf, on which Russia has long aspired to establish a naval station, and another east to Meshed, whence a short extension would carry it on to the Russian railways from the Caspian to Merv. These two main lines would completely open up Persia, and at the same time link her fortunes altogether with those of Russia, who, from the Caspian, would be able to dominate both railways. Mr. Winston proposes that Russian engineers should construct the line, Russian tracklayers lay it, and the metals and rolling stock be obtained from the railway works at St. Petersburg, Kolomna, Briansk and the Ural Mountains.—*Engineering*.

Relief from a Private Car.

The Denver News says: "One of the most generous and commendable acts that has recently been recorded of a wealthy gentleman traveling across the country in his own special cars was that of Jesse Seligman, of New York. When the train reached the washout which occurred on the Rio Grande Road, near Castle Rock, it was brought to a standstill and there held all the afternoon and way into the night. There was no place to feed and no place where food could be obtained. Banker Seligman and his party were well provided for, having their own sleeping car, their dining-car and a good store of provisions, which had been laid in at Denver. The passengers on the regular train, however, were not so fortunate, and as there were many ladies the situation began to look rather blue. Pullman Conductor A. J. Ricketts, taking in the situation, went back to the banker's party and told them that there was a number of ladies on the cars who were in need of food and drink. It did not take the banker long to answer, and his answer was "Go and set your tables and I will provide the food." And he did, and he did it handsomely. He set his cooks and servants to work and cooked up a bountiful supply of everything he had in store. His provisions were brought out in such quality and quantity as to surprise all, and the passengers feasted on the banker's meal. But he did not stop here. After feeding all the passengers, he turned to the railroad laborers, who had been working manfully to repair the damage done by the storm. To these men he sent his servants with large servers piled heaping full with the good things he had in store, and every laborer was waited upon by the banker's servants and served up with a good lunch. The train afterward was compelled to return to Denver and await the repairs of the road, and with it came the testimony of all on board of the good heart and splendid generosity of the banker."

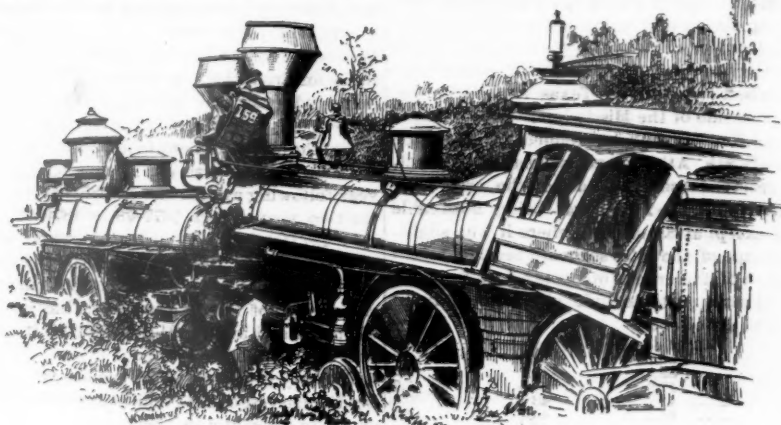


Fig. 1. The Engines.

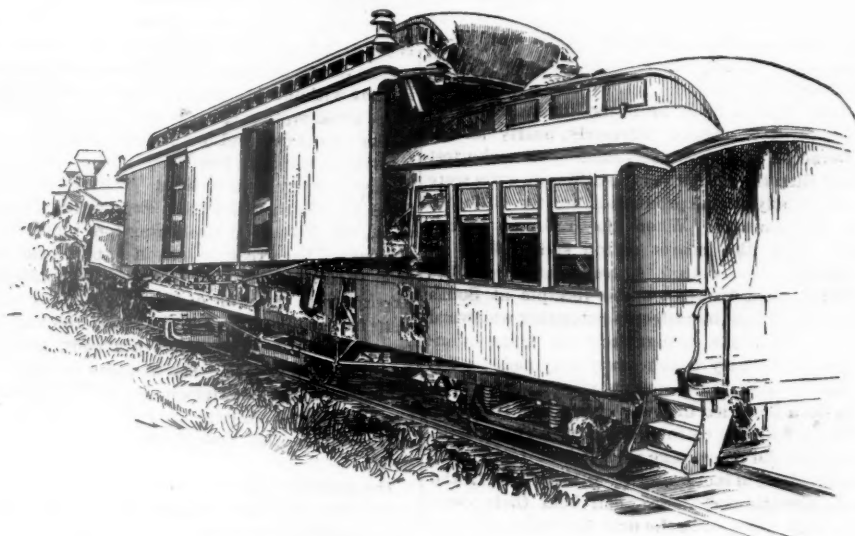


Fig. 2. The Telescoped Cars—West View.

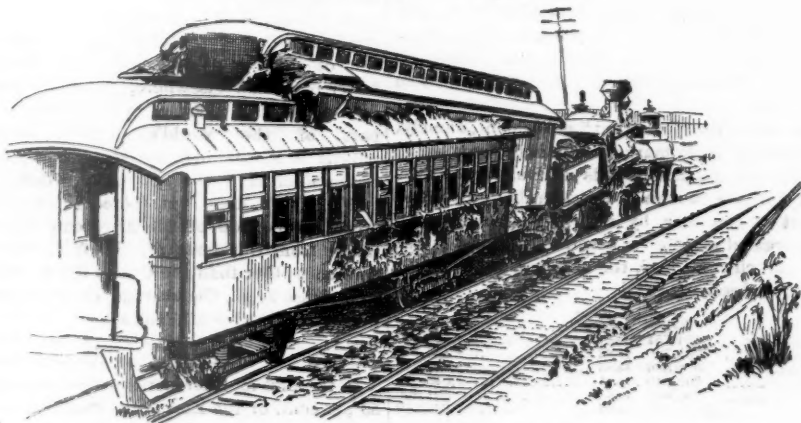


Fig. 3. The Telescoped Cars—East View.

THE SILVER CREEK CATASTROPHE—SEPT. 14, 1886.

having a small ejector connected with it, by which, after the auxiliary reservoirs have once been charged to, say, 20 in., the vacuum can be maintained in the train-pipe at 12 to 14 in. continuously, or just sufficient not to have the brakes go on. The engineer's brake-valve set on the lap maintains the vacuum, but there is a certain leakage.

The Eames apparatus is very much cheaper than the Westinghouse, the price being now \$25, whereas the Westinghouse costs \$50. It would seem as if the actual cost of the two devices, with equal facilities for manufacture, should not be materially different.

The Silver Creek Catastrophe.

The engravings of this horrible catastrophe which we are enabled to present this week will make very clear to railroad men its nature and probable cause. It will be remembered that in the telegraphic reports of the accident it was stated that "the draw-bar of the baggage car was higher than that of the smoking car." Whether this was so or not does not appear in the engravings and we have no other evidence of

Pullman's, provided with approved coupler-buffers, there would have been no telescoping from any such force as this, without going the length of a daily newspaper that "a well-built modern car will rear on end before it will give way to longitudinal pressure," which is good newspaper mechanics, but hardly an assertion we care to indorse. Even with ordinary passenger and baggage cars there would probably have been some broken sills, and perhaps a general smash-up in one end of some car, but hardly such a fearful case of telescoping as the two views of the cars show.

It seems evident that the baggage car mounted at once above the coupling and platform of the smoking car, gave a square blow against the end of the car, and in smashing it in was given a quick slant upward to the level of the windows. There it encountered the line of least resistance, and went on in a nearly horizontal line cutting through the windows on one side and the roof on the other, until the force of the blow was spent.

When we consider that the smoking car was crowded full with passengers at the time, the awful scene of death within



Published Every Friday,
At 73 Broadway, New York.

EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

COTTON.

The review of the cotton crop-year in the *Commercial and Financial Chronicle* of Sept. 11 makes the production in 1885 larger than in any previous year except 1880 and 1882, in spite of the great damage done by unfavorable weather in August of last year. The production for 12 years has been, in millions of pounds:

Year.	Million lbs.	Year.	Million lbs.
1874	1,787	1880	3,202
1875	2,201	1881	2,586
1876	2,100	1882	3,431
1877	2,210	1883	2,759
1878	2,400	1884	2,728
1879	2,772	1885	3,179

Thus last year's production was 16½ per cent. greater than in 1884, 15½ greater than in 1883, 23 per cent. greater than in 1881; but was ¼ per cent. less than in 1880 and 7½ per cent. less than in 1882. But for the damage in August, there would probably have been a crop of 8,000,000 bales, or 3,900 million pounds. The acreage has increased much more rapidly than the grain acreage of the country. For the last six years the production has averaged 2,981 million pounds per year, against 2,262 millions average for the previous six years, an increase of 31½ per cent., which may be looked upon as a permanent increase. This, it must be remembered, has been done in a country which receives scarcely any foreign immigration, and but little from the North, and where the production of other crops has grown much faster than that of cotton.

It was not till 1870 that the South can be said to have fairly reached the point of productiveness which it had before the war. But in the five years 1870-74 the production was nearly the same as in the five years 1856-60, averaging about 3,800,000 bales per year. The production of the last six years has been 6,160,000 bales per year, or 62 per cent. greater. The amount of increase since 1874 (2,360,000 bales) has been greater than in any corresponding period before the war, though the new country over which cotton culture can be extended has been so very much smaller. The average yearly production in successive five-year periods before the war was:

Period.	Bales.	Inc. or Dec.	P. c.
1837-40	1,398,000		
1841-45	2,169,000	I. 771,000	55.0
1846-50	2,236,000	I. 169,700	7.1
1851-55	2,211,000	I. 875,000	27.2
1856-60	3,788,000	I. 577,000	18.0
1861-65	2,470,200	D. 1,318,800	34.7
1870-74	3,805,000	I. 1,334,800	54.0
1875-79	4,939,400	I. 1,154,400	30.3
1880-85	6,158,300	I. 1,198,900	24.0

In the earlier periods there were vast areas of the best cotton lands in Alabama and Mississippi where cultivation had only made a beginning, yet the gain from 1846-50 to 1856-60, when it was greater than in any other period before the war; was but 1,452,000 bales, while from 1870-74 to 1880-85 it has been 2,353,000. Even the rate of increase has been about the same in the last 15 years as in the 15 next before the war—61.8 against 62.2 per cent.

This is very remarkable progress. It would not be noticeable in a Western state, where new farms could be made simply by turning over the prairie sod, and where population was increased by swarms of immigrants from Europe or the older states; but there is very little such land in the South, and the in-

crease in production has been very largely in the old states, and almost wholly by the natural increase of the population.

Of the entire 6,550,215 bales produced last year, 5,996,686 were received at Atlantic ports, New Orleans, as always, having much the largest receipts, and indeed larger receipts than ever before. Compared with the previous year, the gain was largest at Galveston, which received 17 per cent. less than in 1882-83, however. Savannah stood next to New Orleans in receipts last year, though it was very little above Norfolk (including the other Virginia ports with Norfolk); but it was below Norfolk in every other year since 1879, and below Galveston also in 1882-83, and 1876-77. The crop was best last year in Texas and Arkansas, and poorest this side of the Mississippi. This favored Galveston and New Orleans, but tended to make the shares of the South Atlantic ports smaller. In fact, these ports received a smaller share of the crop than for ten years before, the falling off being noticeable everywhere except at Savannah, where it was slight.

The percentage of the total seaboard receipts which arrived at each of the groups of ports below, in which the South Atlantic ports include all south of Baltimore, has been as follows:

Crop of	Gulf ports.	S. Atlantic.	N. Atlantic.
1876	51.1	42.0	6.9
1877	52.3	40.1	7.6
1878	47.9	44.4	7.7
1879	47.2	42.4	10.4
1880	46.2	45.4	8.4
1881	40.6	48.4	11.0
1882	38.0	43.4	8.6
1883	49.0	42.4	8.6
1884	47.1	47.6	5.3
1885	50.9	43.5	5.6

The proportion going to the Gulf ports was larger last year than in any other since the crop of 1877 was marketed.

All these figures have been modified greatly by changes in transportation. Formerly, nearly all the cotton found its way to the seaboard by the shortest route, and then the receipts at the different ports were dependent chiefly on the production of the different parts of the country. When the railroads began to carry from the nearer cotton states—that is, from the Atlantic cotton states—through to the mills, that tended to reduce the receipts at South Atlantic points; but the railroads extending westward from these ports began to carry to them large quantities from the country which previously had shipped to Gulf ports; and later shipments were made by rail to the Eastern factories in great quantities from the most distant of all the cotton fields—from Texas itself. So we see that the percentage received at Gulf ports decreased instead of increasing from 1876 to 1881, and the South Atlantic ports more than held their own, averaging 42.9 per cent. in the first five years and 45.1 in the last five. The receipts given for the Atlantic ports (as for all others) include only receipts by rail from the interior, for the cotton is credited to the port where it is first received. Much the larger part of the cotton brought to New York, Boston, etc., comes by steamers from Southern ports, to which it is credited in these tables.

What is called the "overland" movement, namely, that brought to interior markets with out ever going to any seaport, interests the railroads particularly, because they carry it all, though a considerable amount is moved part of the way by river. The quantity so moving increased rapidly for several years, but it has not grown much since 1879, the numbers of bales having been in successive years:

Year to Aug. 31.	Bales.	Year to Aug. 31.	Bales.
1875	461,751	1881	1,096,067
1876	703,780	1882	1,134,798
1877	676,886	1883	1,217,215
1878	691,610	1884	1,049,070
1879	891,610	1885	961,960
1880	1,181,147	1886	1,260,279

The quantity is a little greater this year than ever before, but only 6½ per cent. more than in 1879-80, though the crop was 13½ per cent. greater. The increase in the overland movement was only one-tenth of the increase in the crop.

How largely the domestic supply comes from the Southern ports may be known from the fact that more than 1,927,000 bales were shipped from the Southern cotton ports to Northern domestic ports. Not all of this is for domestic consumption, for the Northern ports exported 1,278,187 bales, while they received from the interior only 280,800 bales. This shows that cotton bears transportation very much better than grain; for the Southern ports, which shipped about a million bales, nearly all by sea, to Northern ports to be exported thence, nearly all make large exports of cotton directly. Grain and flour would not endure the cost of the additional handling and transportation, but cotton does, the cost of transportation forming a much smaller part of the price.

Cotton manufacturing has had a strange course in this country. Nearly all its progress, taking it as a whole, seems to have been made in two years, as in-

dicated by the following statement of the numbers of bales exported and not exported below:

Crop of Exports.	Consumption.	Crop of Exports.	Consumption.
1872	2,679,986	1,350,522	1,891,776
1873	2,840,981	1,329,407	1,993,050
1874	2,684,410	1,148,541	1,840,814
1875	3,252,994	1,416,294	2,246,725
1876	3,049,487	1,435,926	1,797,473
1877	3,346,640	1,464,625	1,729,526
1878	3,467,565	1,605,966	2,206,224
		1885	4,343,991

The bales not exported are headed "consumption." They were, of course, not always consumed in the crop-year ending with August following the production, but they have remained in the country, and for a series of years measure our consumption exactly. We see that there was but little change in the consumption from the year in which the crop of 1872 was marketed (year to Aug. 31, 1873) for six years, in 1877-78 only 214,000 (17 per cent.) more bales being retained for our own manufacture than in 1872-73. The next year there was an increase of 141,300, and the year following an increase of 285,800 bales, so that in the two years from 1877-78 to 1879-80 the increase was 427,000 bales, or twice as much as for the five years previous. But we can hardly say that there has been any increase in consumption since 1879-80, for the average of the six years since has been but 1,768,985 bales, and in 1883-84 and 1884-85 it was considerably less than in 1879-80.

The very great prosperity for the two years preceding the harvest of 1881 will account for the great increase in consumption then; and the dull years that followed probably prevented any further increase. Last year's larger consumption may reasonably be attributed to a beginning of better times. Doubtless the capacity for the production of goods continued to increase for some time after the demand ceased to grow, so that without any additional works even last year's large consumption may be exceeded.

The export demand has been more steady than the home consumption, but like it increased with extraordinary rapidity at one time. But in the five years from 1872-73 to 1877-78 the exports increased 25 per cent., while the home consumption increased but 17 per cent. The great growth in exports came a year later than the great growth in home consumption, the exports from the crop of 1880 being 30 per cent. more than from the crop of 1878, while the consumption from the crop of 1879 was 29 per cent. greater than from the crop of 1877. But as there has been very little increase in consumption since 1879-80, so there has been no increase in exports since 1880-81, the average exports of the last five years having been 4,108,160 bales.

The general result is that about the same proportion of the crops of recent years is exported as of the much smaller production about ten years ago. Of the production of the last six years 68 per cent. has been exported; of the production of the six years 1872-77 69 per cent. was exported. Thus the consumption of American cotton here has increased very little faster than in the rest of the world. As population has grown much faster here than elsewhere, this may seem strange; but while this country affords much the larger part of the world's supply of cotton, it affords it all its increase in consumption, because the production of the rest of the world (chiefly India and Egypt) does not increase; consequently, a larger proportion of the European supply has to be taken from this country. In fact, the supply from countries other than the United States cannot be said to increase at all, the average of successive five-year periods having been, in bales:

Period.	Bales.	Period.	Bales.
1866-71	2,397,000	1872-77	2,022,000
		1878-83	2,071,000
		1884-85	2,110,000

In the first of these periods other countries supplied 53 per cent. of the European consumption; last year, only 31 per cent. Our consumption has actually increased much the fastest, having been 47½ per cent. more in the last six years than in the six years ending with 1877-78, while the European consumption has increased but 21½ per cent. Going back still further we find the European manufacture to have consumed 1,754 millions of pounds per year in the six years to 1871-72, and ours only 413 millions, while in the last six years the European mills have consumed 2,743 millions, and ours 875. Their consumption has increased 989 millions (56 per cent.); ours, 462 millions (112 per cent.). But the supply from countries other than the United States has decreased 44 millions meanwhile, and the result is that the European mills have had to get their whole increased consumption from us.

Thus now, as heretofore, the chief market for our cotton is abroad, which is not true of any other important production of the country.

The world's dependence on this country for cotton may be very important to the South and the Southern railroads. The area on which cotton can be grown profitably is much more limited than that available for the other great crops of the country. The world's

consumption has been increasing rapidly. In 14 years it has increased 67 per cent. Should it continue to increase at anything like that rate there must be an enormous further extension of cotton-growing, which must be almost entirely in this country, experience indicates, unless there is a considerable advance in price. Either will have a great effect on the prosperity of the South.

THE NORTHERN PACIFIC REPORT.

The Northern Pacific Railroad Company already works one of the large systems of the country, 2,778 miles at the end of last June, and one which must grow constantly, to prevent being smothered by rival roads, as the Union Pacific was to a great extent because it was too slow by years to occupy the field which it first penetrated, but which could not wait for its slow motions. The Northern Pacific has the advantage of a comparatively light capital account, or rather, of comparatively light fixed charges, for its capital stock is no less than \$43,000 per mile of road owned. Yet in these early years it had a very small margin over fixed charges. Last year this margin was only \$111,200, which is but 1 per cent. of its net earnings, and \$41 per mile of road worked. The year before it was still less—\$91,000.

This does not take into account the income from the land grant, which is not applicable to the payment of yearly charges, but only to the reduction of the capital. Nevertheless the company has made unmistakable progress since it was opened, and that in spite of some special drawbacks, notably the very low price of wheat, the chief crop on its lines, which without doubt has checked considerably the growth of the country, on which it depends for its income.

The most favorable fact shown in the report for the last fiscal year (to June 30) is the great growth in the freight traffic, which was almost entirely in the local traffic. The increase in earnings was not large, but it was inevitable that the freight should be carried for lower rates, and it is very satisfactory to see that the increase in traffic has permitted this without reducing the income of the company. Passenger traffic increased but moderately, only 6½ per cent., but the growth was wholly in local travel, the through travel having been slightly less than the year before. The through freight eastward increased largely (35½ per cent.), but the through west decreased 8 per cent., leaving the total through freight movement but 4½ per cent. more than the year before, while the movement of local freight increased no less than 37 per cent.—42 per cent. east and 29½ west. This is the foundation on which the future prosperity of the company must be built. It is a favorable turn, for from 1884 to 1885 there had been a decrease of 26½ per cent. in the passenger traffic and of 2½ per cent. in freight traffic, though this was doubtless very largely due to the very large amount of construction materials carried in 1883-84.

Like the traffic on the Union and Central Pacific lines, and unlike that of railroads farther east, the through freight going west is much larger than that going east—last year two-thirds larger and the year before 2½ times as great. This is due to the fact that while the Pacific Coast gets most of its merchandise from this coast by rail, it ships by far the larger part of its produce by sea.

The through traffic of the Northern Pacific is much less important than is generally supposed, however. Last year there were on the average 57 tons of freight each working day shipped through east and 94 tons shipped through west, and the numbers of through passengers daily were 19 east and 31 west.

The earnings from through and local traffic were:

	1885-86.	1884-85.	Inc. or Dec.	P. c.
Through.....	\$506,921	\$674,088	— \$167,167	16.0
Local.....	2,171,097	2,141,632	+ 29,465	1.4
Freight.....	716,058	978,180	— 262,122	26.8
Local.....	7,216,789	5,718,989	+ 1,497,797	26.2
Construction.....	109,753	258,458	— 148,705	57.5

Thus the earnings were kept up, not to say increased, only by the great growth of the local freight traffic, the earnings from all the other traffic having fallen off no less than \$1,001,320. And this great gain in local freight earnings was in spite of a considerable decrease in the local rates, which averaged 1.85 cents per ton per mile, against 2.01 cents the year before, a reduction of 8 per cent. Evidently the profit on the through freight must have been very small.

The average expense per ton per mile being 0.79 cent., no possible allowance for the greater cheapness of through freight can leave much margin over the 0.87 cent. received, so little that it is safe to say that not 4 per cent. of the net earnings from freight were from the through business. The difference between the through and local passenger rates is not so great; but the average expense per passenger mile, 2.11 cents, is above the average receipts for through passenger,

2.07 cents, and these latter must have yielded less profit than the through freight even.

The change in the aggregate of working expenses was very small, amounting to a decrease of \$34,500; but there already had been a decrease of \$981,454 from 1884 to 1885, and though there was a decrease in train mileage then, it was only 4 per cent., while the decrease in expenses was 13½ per cent. Last year there was an increase of 10 per cent. in train miles, so that an increase in expenses was to be expected. The decrease under any one of the five general heads of expenses is large only in the case of general expenses (12 per cent.), but some of the other expenditures were very small. Repairs of locomotives were at the rate of \$856 each, and the total expenditure for rails for renewals was \$18,472—less than \$7 per mile of road; road-bed and track repairs cost \$262 per mile of road, tie renewals, \$56, and twice as much as the year before. The greatest single saving was in the cost of the fuel, which in spite of a tenth more train-miles cost 15½ per cent. less—falling from 19.46 to 14.64 cents per train-mile—a very important change. The expenses per train-mile are no greater now than on many Eastern railroads, and have fallen materially, having been:

Passenger train.			Freight train.		
1883-84.	1884-85.	1885-86.	1883-84.	1884-85.	1885-86.
\$1.34.	\$1.10½.	\$0.95.	\$1.30.	\$1.30.	\$1.17.

The report of the Land Department shows land sales a little greater than the year before, but less than in any previous year since 1879. Sales in Dakota have fallen off greatly, but they have increased in Montana and Washington, being nearly as great in Washington as in Dakota last year. The sale of the remaining lands in Dakota east of the Missouri was made after the close of the fiscal year. The estimated quantity of these lands is 2,430,000 acres, which are sold at \$2 per acre in preferred stock. These include all the poorest lands in the district, of course, they having been in the market many years, and the price, which at the current market price of the stock is \$1.20 in cash per acre, is not so low as might appear by comparison with the prices realized for what has been sold to settlers. This sale limits the amount of preferred stock that can be cancelled, the \$4,860,000 realized from that, and the \$1,259,065 due for sales previously made on time makes \$6,119,000, which will reduce that stock to about \$32,000,000, or about \$15,000 per mile of road owned. To pay 5 per cent. on this will require \$1,600,000 more of net earnings—an increase which may reasonably be expected at an early day. It must receive 8 per cent., or \$2,560,000, however, before the \$49,000,000 of common stock can receive anything.

Meanwhile the Cascade Division is in progress, and is to be opened next winter with a temporary line over the mountain, where the tunnel is under way. This line will open a route from the great wheat fields of Eastern Oregon and Washington to the deep water of Puget Sound, and may have an important effect on that trade, which now all goes to Portland by the Oregon Navigation Company's line. Portland is the trade centre of that part of the country, and will probably long remain such, because of the advantages of established business and capital; but it is not on the sea, and vessels will probably prefer to go to Puget Sound for wheat. At least there is evidently fear that the trade will go there when the way is open for it. At present the Northern Pacific gets very little of this wheat traffic, as its main line for the most part passes northwest of the wheat country, which is pretty well covered with the Navigation Company's lines, though there is a good country on the completed portion of the Northern Pacific's Cascade Division. The Northern Pacific's new branch from Spokane to Belmont enters the wheat country southwest of the Columbia River, however, and a not very long extension of it would cross the whole wheat country and offer a large part of it the choice between Portland and a Puget Sound town for an export market. This would be likely to secure for the Cascade Division a considerable traffic, which for the most part would be taken from the Navigation Company's railroads. Whether it will be profitable or not depends largely on the effect on rates. The Navigation Company makes large profits on it now, and if rates should go so low as to make the business unprofitable for the Northern Pacific, it would be a serious thing for the Navigation Company, which thus in any event is likely to lose by it.

The Brake Tests Next April.

The freight brake committee of the Master Car-Builders' Association, which held a meeting in this city on Thursday, the 16th inst., came to an eminently sensible conclusion. It was agreed after several hours' amicable discussion that it was not desirable, under the circumstances, to have the proposed "en-

durance test" go on now, but rather that a new series of tests should be held in April, 1887, at which all the late competitors, and any new ones who may desire to enter, shall be at liberty to do so, with their brake gear fitted up in any manner they see fit.

In the meantime, any company which desires can have the proposed "endurance" records (i. e., the records of the repairs on their brake-gear, as it came out of the tests, between July, 1886, and April, 1887), informally recorded, and can publish them on their own account, but they will not be a part of the official record.

The Westinghouse and Eames cars are both in regular service as they came out of the tests, and particular desire was expressed by both of those companies to have the endurance records made, with the expectation that they will show far lower cost than is expected. The American cars have likewise gone into regular service as they came from the tests, but it would appear that considerable modifications are contemplated in the brake-gear which will be entered for the April tests. The Widdifield & Button cars are also now in service, but certain modifications are being made in the brake-gear. The Rote Brake Co. claims that the complete failure which its brake made at Burlington was due to defects of detail, and consequently expects to enter the tests with a new outfit complete.

Thus it will be seen that every one of the buffer brakes tested still holds to the belief that it can make an efficient practical brake. We sincerely hope they may be able to do so, but it would seem as if some of them did not realize the formidable nature of the difficulties which they have to encounter, one of the greatest of which, if not the greatest, is to make the train handle-able, to coin a word, under all conditions of practical working. We have good authority for believing that "all things are possible," but it raises discouraging apprehensions to see the very serious obstacles to a satisfactory result so jauntily underrated as they are by some of the late competitors.

One addition to the conditions for entering the test should certainly be made: Every competitor should be required to present evidence that the train which he enters has *actually made stops* (say, three at least) with safety and apparent efficiency. It is for the interest of no one that trains should be sent away out to Burlington to determine whether they will work at all with either safety or success. There is, at least, a very good chance that if this rule be enforced some of the newly fitted-up trains will never reach Burlington, and thus much valuable time, as well as expense, be saved.

The two air brakes have nothing like the necessity for important modifications that the buffer brakes have, but it would be risking little to predict that between now and next April it will be found wise to make some considerable modifications of detail in each of them also, since there was certainly room for improvement in their action. It will be seen in the diagrams of the stops which we shall shortly publish, as indeed may be seen in the diagrams of brake pressure which we have already published (Sept. 10), that an immense improvement, doubling or even tripling their average efficiency as well as doing away with the serious question of shock, would be obtained by some electrical or other device which would admit the pressure to the brake-gear at the same instant throughout the train. The advantage of this will be so very great that it will be surprising if it does not constitute a feature of the ultimate standard freight brake, but, failing that, some modification which will at least improve the action of the devices as they are in this respect is highly desirable, and it would seem that it ought to be possible.

A device for controlling the admission of air by electricity, the invention of Mr. Henry Flad, of St. Louis, President of the American Society of Civil Engineers, and well known as an able and level-headed engineer, is now being tested on the Baltimore & Ohio in passenger service, and, we understand, with hopeful results. It would lend great interest to the coming tests if that or some other equivalent electrical device were to be a feature of them.

The expense of the April tests will be borne by the brake companies instead of by the railroad company, but this need exclude no competitor. The Westinghouse Brake Company, in a very moderate and courteous way, declared that it was quite willing to be responsible for the entire expense, and desired no competitor excluded. Its better established rivals are not likely to be willing to avail themselves of such an offer, and so declared, expressing their readiness to pay their proportion, but there may be some competitor who will not be in a position to be so independent, and the final action of the joint committee in passing a resolution that the expenses should be

apportioned in such manner as the brake committee should decide relieves the question of all embarrassment, to the extent at least that if any competitor is ready to appear with a train, "no questions will be asked," or need be.

It is not probable that the April tests will include so long a programme or take so long a time as those of last July, as it will no longer appear necessary. A joint meeting will be held at Pittsburgh, Pa., in February to fix a programme for the tests.

One of the most important conclusions, well justified by the dangerous shocks which were experienced with loose link couplings, was the resolution passed requiring either close couplings or links with the slack blocked out, which is one of the first official actions looking to a decision on the coupler question.

Chicago Shipments in August.

The through shipments of freight (not including live stock and dressed meats) from Chicago eastward, to points as far as Buffalo, Pittsburgh and the western termini of the eastern trunk lines, as reported by the seven co-operating lines, were only 115,933 tons last August, which is less than in July even, and less than in any previous month of this year, which has seldom been the case, though it was last year and the year before. The shipments in successive months since the Chicago & Atlantic ceased to report have been, in tons:

Year.	April.	May	June	July.	August.
1879	131,570	119,314	123,197	117,157	115,933

A very large allowance for the Chicago & Atlantic (including the Wabash) in August, when it complained that it was not getting its share, would make the total shipments for August not more than 145,000 tons, while for eight years the August shipments have been:

Year.	Tons.	Year.	Tons.
1879	162,263	1883	166,271
1880	169,314	1884	146,922
1881	260,608	1885	174,358
1882	138,241	1886	145,000

Thus the shipments this year were less than in any other except 1882, though only a little less than in 1884. Last year and in 1881, when the shipments were largest, they were largely diverted from the lake by cut rates, but in 1880, with a 30 cent rate, the shipments were one-sixth greater than this year at 25 cents, and in 1883, with a 25 cent rate, they were 14 per cent. greater. The heavy winter wheat movement in July and August has not profited the Chicago railroads at all—very little of it having gone to Chicago, in fact; but neither has it profited the railroads east of the other great Western markets, the total wheat shipments from them by rail having been insignificant, and what rail wheat movement there has been has been from interior points east of St. Louis and Peoria, or else has been shipped past the great markets to the numerous junction points with western connections of the trunk lines, where it escapes record.

Considering the large total shipments eastward over the trunk lines, which include what they receive from the lakes at Buffalo and Erie, however, it is remarkable that the Chicago shipments should have been so small.

The total reported shipments from Chicago for the eight months ending with August this year have been 1,182,888 tons, the Chicago & Atlantic having reported for only the first two of the eight months. Including its business, the total shipments can scarcely have been than 1,882,000 tons, and for eight successive years the Chicago shipments for the eight months have been:

Year.	Tons.	Year.	Tons.
1879	1,796,193	1883	1,564,682
1880	1,514,080	1884	1,911,265
1881	1,840,297	1885	2,186,302
1882	1,329,438	1886	1,582,000

Thus this year the shipments have been very much less than in any other except 1882. Not only is there a decrease of 30 per cent. from last year's shipments, and of 27 per cent. from those of 1884, when the shipments were greatly increased by carrying at cost or less, and so diverting freight from the lakes, but the shipments were 11 per cent. less than in 1883, when the rates were the same in the summer and higher in winter, and 9 per cent. less than in 1880, with a 40-cent rate for two months and 35-cent rate for one month, and a 30-cent rate for the other five months, against a 25-cent rate throughout the eight months this year; and they were no greater than for the first six months of 1881, at 35 and 30 and 25 cents. However it may be considered, the Chicago rail shipments this year have been extraordinarily light.

LIVE STOCK AND DRESSED BEEF.

The shipments of live cattle from Chicago were larger in August than they had been before since May of last year, but the increase in these did not diminish the dressed beef shipments, which were but very little less than in July, when they were the largest ever known.

The total shipments of live stock and dressed meats from Chicago in the eight months to Aug. 31 this year and last were, in tons:

	1885.	Increase.	P.c.
August	78,843	66,037	12.806
Eight months	508,738	488,447	110,291

This is a very large increase for an article of the kind, which is chiefly consumed in the country and the exports of which have not increased. We learn that rates have not been maintained, but the reduction has not been very important, and the rates this year have been very much higher than last year. These August shipments were considerably more than half as great as the shipments of all other freight and very likely yielded quite as much net earnings.

The shipments of live cattle and dressed beef in August were:

	1885.	1885.	Increase.	P.c.
Live cattle	35,778	29,142	6,636	22.8
= beef	20,394	16,611	3,783	22.8
Dressed beef	26,190	20,440	5,750	28.1
Total beef	46,584	37,051	9,533	25.7
P. c. dressed	56.2	55.2	1.0	...

There was thus a very large increase in the cattle shipments as well as in the dressed beef shipments last August, though the increase was greatest in dressed beef. This has not usually happened before, the shipments in successive months having been:

	1885.	1885.	1885.	1885.
January	42,745	30,396	17,950	22,328
February	32,602	27,936	15,014	21,431
March	31,939	25,085	14,028	18,892
April	37,141	31,847	17,983	20,176
May	36,159	25,305	19,369	23,163
June	32,150	28,000	18,370	23,213
July	30,800	30,662	19,082	26,547
August	29,142	35,778	20,440	26,190

Thus, in every month except August, the cattle shipments were less this year than last, and in the aggregate much less, while the beef shipments were larger this year, as they were in August also. It is not easy to see why the cattle shipments should have increased so much in August, making the total beef supply much larger than in any other month of the year, but as the whole supply does not come from Chicago it does not imply that the consumption was so much larger. So large an increase in consumption would hardly be possible.

For the eight months ending with August the Chicago shipments of live cattle and dressed beef have been, in tons:

	1885.	1885.	Inc. or Dec.	P.c.
Live cattle	235,008	272,087	-37,079	13.8
= beef	133,935	151,472	-17,537	13.8
Dressed beef	181,942	142,337	+39,705	27.9
Total beef	315,877	297,609	+18,268	6.1

The increase in the total for the eight months, 6 per cent., may well represent increase in consumption—certainly much more closely than the increase of more than 25 per cent. in the month of August. The increase of 28 per cent. in dressed beef shipments against the decrease of 13 per cent. in cattle shipments tells the story of the growing use of beef slaughtered in the West.

Trunk Line Shipments Eastward.

The movement of freight eastward over trunk lines in August, including all shipped from their western termini (Toronto, Buffalo, Pittsburgh, Wheeling, etc.), or points further west and transferred to them there, were larger last August than in any previous year since 1881, which has been true of the shipments of every other month of this year since April. For seven years the August shipments over these lines have been:

Year.	1880.	1881.	1882.	1883.	1884.	1885.	1886.
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The increase this year over last is no less than 30 per cent., which is in striking contrast to the decrease of 17 per cent. in the rail shipments from Chicago, and indicates that the lake vessels and the railroads south of the lakes have brought a very much larger tonnage to the trunk lines this year. The Chicago rail shipments eastward were equal to but 13.8 per cent. of the trunk line shipments eastward this year, while they were 21.5 per cent. last year, and 23.6 in 1881. In 1882, when also there was a good winter wheat crop, the Chicago shipments were also an exceptionally small proportion of the whole, being then, however, 14.4 per cent., against 13.8 this year. It must not be understood that the Chicago shipments all go over the trunk lines, though most of them do, or that under them is included all the freight included in the trunk line statement.

While there was a gain in the trunk-line shipments eastward in four other months of this year, it was much larger in August than in any other month, it having been 22,279 tons (5 per cent.) in February, 69,164 (7 per cent.) in May, 39,735 (4 per cent.) in June and 148,188 tons (18 per cent.) in July, against 241,283 tons (30 per cent.) in August.

The increase of 389,466 tons in the month of July and August was doubtless to a large extent due to the greater quantity of wheat marketed, the receipts of wheat and flour at the Atlantic ports in these months having been 385,690 tons greater than last year, more

than half of which were by rail, besides which there were doubtless larger receipts at interior points between the western termini of the trunk lines and the seaboard.

For the eight months ending with August the trunk-line eastward movement has been:

Year.	Tons.	Year.	Tons.
1880	7,321,827	1884	6,313,498
1881	7,409,966	1885	7,243,913
1882	5,894,622	1886	7,178,591
1883	6,418,742		

The gains this year since navigation opened have not been enough to overcome the great decrease in the first four months of the year, when the shipments last year were extraordinarily large, nor does this year's movement equal that of 1880 and 1881, but it was 13.7 per cent. more than in 1884, when rates were much lower, and was 11.8 per cent. more than in 1885, when rates perhaps averaged a little higher; not to say 22 per cent. more than in 1882, when during the five months from March to July east-bound traffic was extraordinarily light.

The crop year for these railroads begins with July, and the July and August shipments have been much larger than in any other year since 1881, while the gain of August over July was unusually great, indicating an early crop movement, such as there was in 1882 and 1883. Last year the great increase in the east-bound movement which almost always comes at some time after harvest began in September, when it was 272,600 tons more than in August and greater than in any previous September, but then it was favored by ridiculously low rates, which at once stimulated shipments, and turned them from the canal to the railroads. But this traffic continued large throughout the year, being for the last four months of the year:

1880.	1881.	1882.	1883.	1884.	1885.
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It is well to bear this in mind, because if the traffic is only as large as last year hereafter, it will be very large, and quite as satisfactory as the large gains in July and August.

There was doubtless some cutting of rates on this traffic in August, but doubtless also the rates were decidedly higher than last year, and higher than in 1881, but much lower than in 1880. The two railroads added to the list of competitors since 1883 together take perhaps one-sixth of the traffic, and the profits to the old roads are of course much less than when they had all the traffic to themselves and the rates were higher; but the situation for them is very much better than in the last two years.

As usual when a new transcontinental line is opened, the completion of the Canadian Pacific to the Pacific has been the occasion of a great deal of talk about the great through traffic which it is likely to carry, of the travel between Europe and Australia and China and Japan, and the like. While this talk is still going on the report of the Northern Pacific comes out and shows that its total earnings from through freight in its last fiscal year were \$728,876, or \$429 per mile of its main line, and less than 9 per cent. of its total freight earnings. At the same time its earnings from through passengers were \$566,921, which is 27 per cent. of its total passenger earnings and \$333 per mile of main line. But the Northern Pacific has a considerable population near its Pacific terminus, in Washington and Oregon, and probable seven-eighths of its through traffic was in the service of these people; the Canadian Pacific has a very much smaller population at its Pacific terminus. Further, the through traffic is no longer a profitable traffic. It is not to be expected that the extremely low rates of the present year will continue always, but the through freight at least cannot be made to yield a large profit when circumstances are most favorable. Last year it yielded on the Northern Pacific an average of 0.87 cent per ton per mile gross, the average expense per ton per mile of all freight being 0.79 cent—not so much of course for through freight, but certainly so much that the profit on it could have been but trifling compared with that on the local freight, which yielded 1.85 cent per ton per mile, and has a long average haul (262 miles). In 1884-85, when through rates were probably as high as they ever will be again, the through freight yielded only 1.24 cents per ton per mile, against 2.01 cents for the local freight, and an average expense of 0.94 cent for all freight.

It is not to be expected that the Canadian Pacific will be able to secure as much Pacific traffic as the Northern Pacific, until the population of British Columbia is much greater than it is now. If it competes at present rates with the California lines for the traffic of that part of the coast, which is several times as great as the traffic further north, it will lose money on every car-load it carries, and the trans-Pacific traffic, after 17 years of nursing already, is simply

insignificant when it comes to supporting a railroad across the American continent, and must be carried at lower rates even than those required for the California and Oregon traffic. The Canadian Pacific, like the other railroads to the Pacific, but more than they, must depend for its support on the traffic of the country on or near its own railroad. If that country is what it is generally reported to be, it cannot fail in time to give a good support to that part of the line west of Lake Superior.

The New York newspapers generally report unusual activity in trade, especially the dry goods trade, but the shipments from the city indicate that the business, though doubtless good, is less than last year. The total shipments of freight through to the West and the shipments of first-class freight this year and last were in successive periods this year and last:

	Total.	1885.	1886.	First-class.	1885.	1886.
July.....	86,534	102,397	21,159	24,929		
Week to:						
Aug. 7.....	21,395	19,671	5,629	5,581		
" 14.....	22,117	25,436	5,955	7,384		
" 21.....	23,681	26,235	6,428	7,947		
" 28.....	25,699	26,351	6,692	8,108		
Sept. 4.....	27,732	27,878	6,484	8,687		
" 11.....	24,319	29,499	6,986	8,611		
Six weeks....	144,943	155,070	38,174	46,378		
" 18.....		29,734		7,988		
" 25.....		29,796		7,369		
Oct. 2.....		33,646		7,004		
September.....		127,185		34,713		

We have included above in the first class the shipments of "cotton piece goods" this year, which were in the first class last year and have been a separate class this year only since Aug. 26, and are a very small part of the shipments. We see that in every week since the first week of August (when all traffic was greatly e last year by General Grant's funeral ceremonies) the total shipments, and especially the shipments of first-class freight, were less this year than last, nearly all dry goods being in the first class and forming, it is supposed, a very large part of that class. In the later weeks the decrease in first-class shipments is especially marked, and for the five weeks ending with Sept. 4 it was no less than 17 per cent.

Doubtless the higher rates this year have caused greater shipments by canal, but heretofore it has been the lower classes chiefly which the railroads have diverted, not much first-class freight having gone by canal when rail rates were highest. The general testimony is that more than usual has gone by canal this year. But it is not easy to believe that enough first-class freight has gone to make up for the decrease in trunk line shipments, and it is probable that actually the total sales and shipments have not been so large as last year at this time, this being the time when business last year was very much greater than in previous years.

Grain receipts at New York last August were much larger than in any previous month of this year, and the rail receipts were the largest since May. The total receipts (grain and flour) and the rail receipts in August for seven years have been, in bushels:

	Total.	By rail.	P. c. by rail.
1880.....	17,599,416	8,107,387	46.0
1881.....	15,068,306	10,562,841	70.1
1882.....	13,520,880	9,000,968	66.6
1883.....	11,349,829	6,525,847	57.5
1884.....	10,797,854	6,017,959	55.7
1885.....	12,375,019	7,024,991	57.2
1886.....	14,041,072	6,065,992	47.7

Rail rates were not at their worst in August last year, but they probably did not average much more than 15 cents per 100 lbs. from Chicago to New York, and were at least 7 1/2 cents higher this year. Thus it is not surprising that with an increase over last year of 1,766,000 bushels in the total New York grain receipts, there has been a decrease of 328,000 bushels in the rail receipts. The total receipts were the largest since 1881, and but 7 per cent. less than then, the canal receipts having been much larger than in any other year since 1880.

The distribution of the receipts among the several railroads is noticeable for the very large share brought by the New York Central and the Pennsylvania, and the small share by the Erie. The percentage of the total rail receipts by each road in August and the seven months ending with July have been:

	N. Y. Cen.	Erie.	Penna.	Lacka.	W. S.	Others.
August.....	40.9	19.3	18.5	6.1	8.9	6.3
7 months.....	32.8	26.3	11.5	14.0	7.9	7.5

The Lackawanna share was 14.9 per cent. of the whole for the first six months of the year, but in July only 6 per cent. The Lehigh Valley also ceased to carry much grain. All but 1 per cent. of that ascribed to "other" roads, we may credit to it. It brought 13.8 per cent. of the whole in April, 13.4 in May, and 10.3 in June; then the business seems to have ceased to be attractive to it, for it brought but 3.9 per cent. in July, and 5.3 in August. The West Shore keeps up well, having a slightly larger share in August than in any other month of the year, while it and the New York Central together brought very nearly

half (49.8 per cent.) of the total rail receipts. The Erie brought only 201,375 bushels more than in July, while the New York Central brought 889,824 bushels more.

Fast Runs and Crossing Stops.

The log of a fast service run in another column certainly shows an interesting and creditable performance, but there is another feature of it which is or ought to be still more interesting, and which is certainly vastly less creditable—the enormous number of crossing stops and the time (not to speak of money) lost thereby. Not that the number is enormous as compared with what exists on many other roads; on the contrary, there are very many which have more, and the average for 500 miles around Chicago is little if any less. But here is one actual record right before us, and for the very reason that it is not exceptional its moral is worth attention.

It will be seen that of the total of 39 stops required in this run of 269 miles, 20 were required by stops at grade crossings, 1 by a stop at a drawbridge and 1 by a stop at a junction, all of which (22 in all) are readily avoidable with greater safety by using interlocking apparatus as to time.

	E. Div.	W. Div.	Total.
Of the total run of.....	127 miles.	142 miles.	269 miles.
In.....	147 min.	230 min.	404 min.
There were lost at station stops.....	(4) 11 "	(13) 29 "	(17) 40 "
And at crossing, etc., stops.....	(7) 14 "	(45) 26 "	(22) 40 "
Total loss by stops.....	(11) 25 "	(28) 55 "	(59) 80 "

This is allowing only 1 1/2 to 2 min. lost time per stop, whereas really it should be considerably more.

But, even with the small allowance made, there was an average of 20 per cent. of the running time lost by stops on this fast run, of which an even half was lost by crossing stops. Had the latter been dispensed with, there would have been saved, first, the direct cost of the stops; secondly, the excess of cost of making the run at 50 miles an hour, instead of 42 to 45, which latter would have given the same time between termini with crossing stops only eliminated; thirdly, the necessity of making the fast run at all in many such cases, if not in this one; fourthly, the danger of accidents at crossings, which is considerable, the average of our record for twelve years past showing 22 crossing collisions per annum out of a total of 386, or about 6 per cent.; fifthly, it is highly probable, at least, that freight trains would be able to handle a car or two more if relieved of the crossing stops. All the above savings, moreover, apply proportionately to the roads which are crossed, as well, so that the importance of making them is doubled.

This makes a formidable aggregate, and in contrast with it we have the fact that the cost of interlocking apparatus of the best type, which will save it all, is only from \$2,500 to \$4,000 per crossing, averaging perhaps \$3,000, which includes eight signals (a home and distance signal for each track), four derailing switches (one for each track), and, for a separate sum of about \$250, electric locking apparatus, which renders it impossible to change the signals after a train has once passed over the distant signal until it is over the crossing. As only one man is required to attend to this apparatus, and one man is required now, that item may be neglected. The cost of building and erecting the apparatus may be \$400 more.

Estimating the total cost at \$3,600 per crossing, of which on an average half will be chargeable to each road benefited, the cost is only \$1,800 per crossing, so that the 22 crossings on the Chicago & Atlantic, for example, can be so protected as to dispense with crossing stops for about \$40,000, the interest on which at 6 per cent. is \$2,400, or about the average cost (at say 90 cents per train-mile), of running ten trains per year over the road. To this is to be added something, which we will not attempt to estimate, for the extra cost of maintenance over that of the signals now in use; but making the most liberal allowance for it, can there be a clearer case for any kind of improvement than there is for abolishing such crossing stops?

It will, in the not distant future, we may be sure, be a matter of astonishment that so clumsy and costly a safeguard as a full stop at crossings should have remained in use so long after a far better and safer system had been perfected and proved its efficacy by long continued service. One great reason, however, and perhaps the chief reason, is the state of the law on the subject. As was pointed out in our issue of Jan. 1, 1886, there are only six states, Massachusetts, Ohio, Michigan, Indiana and New York, which as yet have permissive laws which permit the railroads to dispense with grade crossing stops when the crossings are protected by interlocking apparatus, and in every one of these states the law is so drawn that the erection of the apparatus depends on agreement between the roads, not only as to the erection of the apparatus, but (with one doubtful exception) as to the precise proportion of the expense which each road shall bear. Such a road as the Chicago & Atlantic, therefore, which may wish to dispense with the nuisance of crossing stops, has the cheerful prospect before it of entering into 22 different negotiations with 22 different companies to obtain agreement, first, that it is worth while to do anything of the kind, and, secondly, that "our company" should bear this and that rather than that and this proportion of the expense. A more hopeless and sickening prospect than such a series of negotiations can hardly be imagined.

Condition of Brake Shoes in Burlington Brake Tests.

The test trains which were entered for the Burlington brake tests were in quite different condition as respects the shoes, and in order to show what the actual differences were,

for what they were worth, it was concluded at the end of the test to take the photographs of the shoes, from which our engravings have been prepared.

The shoes were selected as follows: A single shoe was removed from the same wheel of every fifth car, making ten shoes in all. These were then assorted in two lots by selecting out every other one to insure that there was no material difference in the average of the two lots. In no case was there found to be any very material difference, and accordingly the shoe from car 5, 15, 25, 35 and 45 was in each case used. The two shoes on each side of those which show the inside face were added merely to give the form of the shoe.

It will be seen that the Westinghouse shoes were in by far the best condition as respects fit of shoe to wheel, the American and Eames the worst, and the Widdifield & Button slightly better than the latter, but not materially so. This is explained by the fact that the Eames and American shoes were practically new and unworn when they entered the test, the amount of polish shown being for the most part what had been acquired during the test stops themselves. The Widdifield & Button were also practically new when they entered the test, but had been more used than the other two. The Westinghouse shoes, on the contrary, were well worn to fit the wheels when the tests began.

It is but just to add that this superior condition of the Westinghouse shoes was less due to any care of the Westinghouse Company itself than to the care of Mr. Godfrey W. Rhodes, Chairman of the Committee, on whose road the Westinghouse competitive train was fitted up. Supposing, very naturally, that all the other trains entered would come to the test in the best possible condition in respect to such details, he caused some care to be exercised, without any particular request to that effect, in changing shoes and looking after some other similar details, in order that the train fitted up by his road might be at no unnecessary disadvantage.

The Westinghouse, on the other hand, was at some disadvantage in a few of the earlier stops from the amount of grease which had gotten on the wheels from over-liberal oiling. This, however, soon wore off and to a less extent occurred with all the trains.

How much or how little the differences which appear in the engraving would affect the grip of the shoes cannot possibly be estimated, of course, in any definite way. That it would make some difference is probable, and there seem to be indications of it in the hand brake tests, but even that cannot be positively asserted. Therefore, the facts are merely presented as they are, for every one to form his own conclusions from, when the diagrams and official records of the stops come to be published, as we hope they may be shortly.

To the engravings of the brake shoes proper is added a cut of the Westinghouse brake-beam, which will be seen to be an extremely neat, simple and strong device. The shoes have been slightly slipped out of place to show the method of fastening. The small number of parts is specially noticeable.

It is noticeable that in this collection of four trains of specially fitted up cars there were five different forms of brake-shoe fastenings, shown by the side views of the brake-shoes, which have been added for this purpose. A view of the American break-head has been included likewise, to show what experience proved to be a highly objectionable form. A great number of the break-heads broke through one or the other of the thin necks of the casting; a result which its form will be seen to be well calculated to provoke, and which was plainly due more to its form than to any peculiarity in the action of the brake-gear.

Screw Threads.

The last issue of *Engineering* publishes an article on "Screw threads," chiefly dealing with a movement in Germany to abandon the Whitworth standard for a new one based on metric measures, in which some very large-sized and strangely erroneous statements are made in reference to what has now become the American standard, the Sellers thread. It says:

"The form of cross-section Whitworth adopted for ordinary purposes was that of a triangle whose height was 0.96 pitch and the angle at the bottom of the threads 55 degrees; one-sixth of these triangular sections was rounded off at the top and bottom. This system has been very widely and almost universally used for the last 30 years, the chief and only important exception to their universality being in the United States, where Sellers threads are very much used: they are of a slightly different pitch and form of cross-section, being an equilateral triangle with one-eighth of the depth cut off square, both top and bottom.

"The objection [to the form of the Whitworth thread] is totally unjustifiable, for 30 years of practice have most unmistakably proved the Whitworth form of cross-section to be the best; the square-tipped thread, on the other hand, as advocated by the metric system, has proved unsuccessful. It has been thoroughly tried by Sellers in the United States, where it has been found practically impossible to produce a good thread by screwing apparatus, the sharp corners on the taps and dies rapidly break away, when a very imperfect thread must naturally follow. The present state of affairs in America conclusively shows the system to be a failure, and all the leading machine tool-makers there are supplying nothing but the V-shaped thread very similar to Whitworth's."

The Sellers threads are indeed "very much used," as they are the standards of the United States army and navy and of the Master Mechanics' and Master Car Builders' associations, and of most of the large railroad shops at least. That "all" the leading tool-makers are supplying "nothing" but the V-thread "very similar to Whitworth's," is a fabrication by some one out of the whole cloth. The facts of the case are that from 20 to 90 per cent. of the taps and dies sold by various dealers are already of the Sellers standard, and the remainder of a plain V-thread, the latter having been formerly universal and being still

quite largely in the majority, taking the whole United States together. That the Sellers standard is in any sense of the word going out—and still less that it has practically gone out, as *Engineering* explicitly asserts—is utterly untrue. On the contrary, it is coming in. There is little room for doubt that its use is becoming more general every day, and it would now be hard to find a railroad anywhere on which it would not be asserted at least that the Sellers (or "M. C. B." or "United States," as it is variously known) standard was in use. Many more will assert that they use it than actually do use it, but that is natural.

The comparative merits of the Whitworth and Sellers standards we are not discussing. This, however, we may say, that records, as respects durability and adherence to standard, are being made every day with taps and dies of the Sellers standard, which certainly have not been and probably cannot be surpassed or even approached. The "sharp" angles (120 deg.) do not, so far as we have ever heard or can learn, give any difficulty from breaking off, while they do enable the standard to be exactly reproduced and readily maintained, so that complete interchangeability is assured. As it now appears quite certain that it will come into practically universal use in America, and as there is no prospect that any other standard will, anything calculated to impede its so far continuous progress to that end is greatly to be regretted. Fortunately *Engineering's* assertions are so exaggerated, and—to any one familiar with American practice, palpably false—that they are calculated to disprove themselves.

To make assurance doubly sure in this matter, we address an inquiry to the Pratt & Whitney Co., of Hartford, Conn., famous throughout this continent, and we should imagine throughout the world, not only for the magnitude and excellence of their products, but for their exertions and success in turning out minutely exact standards of various kinds, and especially for screw threads. We risk little in saying that no house in the world is better qualified by experience to form correct conclusions in such a matter. The following is their reply:

"Referring to *Engineering's* comments on the second objection brought up by the commission and the Karlsruhe Society against the Whitworth thread, viz.:

"2. The Whitworth system being measured in inches, it is inconvenient for metrical measurements."

"We would say that if the writer had been aware of the fact that the British Board of Trade had established in decimal sizes all Birmingham gauge dimensions—in effect on and after March 1, 1884—he would not have made such a senseless assertion as is there given.

"If a new universal system of screw threads must be adopted, then it should not be tied down to any special system of measurement, but should rather be designed on a system of standard gauges of various grades similar to our Birmingham wire gauge system."

"In regard to the disposal by *Engineering* of the third objection raised to the Whitworth thread by the Karlsruhe Society, viz., that it is difficult of manufacture, a method of disposal which has justly aroused your indignation and our own, we can also say that the Sellers or Franklin Institute thread, now generally known as the United States standard, is in every respect a more practical form of thread to maintain to gauge than the old V-thread, or even the Whitworth, and is a much more simple thread to produce by machinery or the ordinary workshop tools than the latter form.

"As to the Sellers thread being 'a failure,' we will only refer to the fact that in our large and increasing production of taps and dies for the market in this country, ninety per cent. are United States standard, while many not strictly United States standard in number of threads per inch are so in form of thread, i. e., one-eighth of the pitch flat, top and bottom.

"V-threads and over-size threads are not used to the extent they once were, thanks to the untiring devotion of the Master Car-Builders' Association, through their committee having this matter in charge; and it is now an accomplished fact that bolts and nuts are interchangeable throughout the United States, which previously was not possible with the old system of V and over-size threads.

"Furthermore, a United States standard tap made in the proper manner will cut ten times as many nuts as will one simple V-thread, without appreciable change of size as compared with a standard gauge.

"The United States standard form of thread embodies a condition which makes this great lengthening of the life of a tap possible, and this is not nearly so easily accomplished in the Whitworth thread. At all events, it is impracticable in the latter form to carry out the conditions referred to, and an impossibility in the V-thread.

"As to the objection regarding relative strength of the bolt cut with the United States standard or the Whitworth thread, we can refer to the United States Navy Board report of May 9, 1868, which conclusively shows this objection to be unfounded.

"THE PRATT & WHITNEY CO.
(GEORGE M. BOND, in charge of
Gauge Department)"

This is not the first time that facts and figures as to American practice have been "evolved from the inner consciousness" across the water to suit the occasion, but it is not often that such a complete perversion and reversal of the facts is given currency in a journal of standing. In addition to the railroad shops, the Baldwin Locomotive Works, and nearly, if not quite, all the other large locomotive shops, are using the Sellers system, as are also most of the car shops. Hoopes & Townsend, of Philadelphia, the largest single manufacturers of track bolts, are also using it. The prospects are excellent that the system will come into universal use, as it is now in large and rapidly increasing use. A correction would, therefore, seem to be in order.

Pennsylvania Railroad Earnings in August.

The Pennsylvania Railroad report for August shows a large gain on the Eastern system, which is nearly as great as in July, but the increase in expenses was greater, and the net earnings, which in July were greater than in any other year except 1882, in August were exceeded in 1882, 1883 and 1884. For 13 successive years the gross and net earnings and working expenses of the lines east of Pittsburgh and Erie have been:

	Gross.	Expenses.	Net.
1873.....	\$3,416,271	\$2,257,910	\$1,158,361
1874.....	3,303,931	2,137,747	1,166,184
1875.....	3,230,665	1,939,587	1,291,078
1876.....	3,305,022	1,707,565	1,597,457
1877.....	2,783,115	1,609,997	1,173,118
1878.....	2,972,001	1,485,950	1,486,051
1879.....	2,982,718	1,725,718	1,257,000
1880.....	3,733,355	2,168,874	1,564,481
1881.....	3,809,978	2,365,472	1,444,506
1882.....	4,671,179	2,638,317	2,032,862
1883.....	4,775,380	2,632,756	2,142,624
1884.....	4,617,894	2,466,385	2,151,509
1885.....	3,956,306	2,307,294	1,649,012
1886.....	4,585,391	2,680,345	1,905,046

The increase over last year is \$629,085 (16 per cent.) in gross and \$256,033 (15½ per cent.) in net.

The lines west of Pittsburgh and Erie made the same gain over last year in August as in July, but the surplus over liabilities was not so large. This surplus or deficit of the western system in August has been:

1879—Surplus.....	\$185,904	1883—Surplus.....	\$234,883
1880.....	216,617	1884—Deficit.....	130,061
1881.....	298,709	1885—Deficit.....	69,671
1882.....	260,872	1886—Surplus.....	69,671

Thus there has been a surplus in August on this system every year except last year, but it is smaller this year than in any other except last year and the year before.

For the eight months ending with August the gross and net earnings and working expenses of the lines east of Pittsburgh and Erie have been, for nine years:

Year.	Gross earnings.	Expenses.	Net earnings.
1877.....	\$18,999,848	\$12,617,050	\$6,382,798
1878.....	19,961,272	12,077,680	7,883,592
1879.....	21,179,685	13,077,215	8,102,470
1880.....	23,306,074	15,654,678	10,651,396
1881.....	29,143,240	17,210,607	11,932,633
1882.....	31,471,178	19,601,299	11,869,879
1883.....	33,258,912	21,104,925	12,153,987
1884.....	31,940,231	20,285,561	11,654,670
1885.....	28,961,006	19,632,281	9,328,725
1886.....	32,194,234	21,037,132	11,157,102

The increase this year is \$3,231,228 (14½ per cent.) in gross and \$1,826,377 (19½ per cent.) in net earnings.

The surplus or deficit of the lines west of Pittsburgh and Erie has been, for the eight months:

1879.....	Deficit \$236,854	1883.....	Surplus \$572,529
1880.....	Surplus \$74,547	1884.....	Deficit 712,491
1881.....	2,054,670	1885.....	1,154,209
1882.....	621,902	1886.....	344,206

The deficit is \$810,053 less than last year and \$368,285 less than in 1884, but for four years previous there had been a surplus.

Adding the surplus of the western to and subtracting its deficit from the net earnings of the system east of Pittsburgh and Erie, we have, as the income from the two systems for the eight months:

1879.....	\$7,865,616	1883.....	\$12,726,516
1880.....	12,935,943	1884.....	10,941,179
1881.....	13,087,303	1885.....	8,174,475
1882.....	13,491,781	1886.....	10,810,906

This is a gain of \$2,636,431 (32 per cent.) this year over last, making the income nearly the same as in 1884, but much less than in any other year since 1879.

The later reports of the cause of the Silver Creek catastrophe make it clearer than before how it occurred; viz., from the engineer and conductor of the excursion train permitting a flagman to revise the dispatcher's orders which they had with them. The circumstances, however, were somewhat peculiar.

The excursion train, bound east, and local freight 29, bound west, had orders to meet and pass at Silver Creek. Another west-bound train, ahead of No. 29, had broken down and immediately sent a flagman ahead "to instruct the excursion train to run to Irving and wait there," which he did only too faithfully and with too much success. Very quickly after sending off this message, however, No. 29 came along, pushed the disabled train into Irving, and then went ahead on its rights, "having in possession the order (italics ours) to meet and pass at Silver Creek."

Irving and Silver Creek being both telegraph stations, it would appear from these facts as if neither train had a right to run between Irving and Silver Creek without further orders, although Superintendent Kimball testifies that No. 29 was right in doing so. We have not at hand a copy of the "Nickel-Plate" rules, but we know of no train rules which permit a train to run past the nearest telegraph station on a disabled train's time and orders. It does not appear very safe to do so.

The excursion train was, under any possible circumstances, clearly in the wrong in leaving a telegraph station against its orders on the "instructions" of a flagman without getting orders from the dispatcher. Nevertheless, although the superintendent must, of course, be correct in testifying, as he did, that there was no real justification or excuse for such a preposterous confusion of action, that the jury thought there was a certain shadow of reasonable doubt or ambiguity in the form of the rules is evident from the fact that while five of them fix the responsibility on the excursion train engineer and conductor only, four of them in effect justify the crews and throw the blame on the rules by finding that "the collision was caused by a misunderstanding of the orders of the flagman."

This is not necessarily another case of the stupidity of juries. Rules should be so plain that plain men can have no possible doubt as to the proper course to be pursued. Whether the flagman evolved his "instructions" from his own native

sense of what was proper under the circumstances, or whether, as is more probable, he was hastily sent forward by one man and the train's orders delivered to the following train by another man, the course of events reveals an ambiguity in a number of books of rules which we have examined, which might possibly be corrected to advantage. In no one of them is it distinctly stated that a train, to assume a disabled train's rights, must have in possession both copies of its orders, thus leaving a loop-hole for some such confusion as occurred in this case. On the other hand, had the flagman been required and authorized by a specific rule to carry forward the orders of a disabled train if it in fact appeared necessary from some sudden break-down between telegraph stations to surrender its rights to an opposing train at the stipulated meeting points, as may be sometimes the case, it would not have been possible for him to secure credence, and lure the train on to destruction without them.

Of course, this does not imply that there was or can have been any justification in the rules as they stand, on that or any other road of importance, for such a catastrophe, but there was a certain amount of human nature in the series of blunders, after all, which can probably be a little better guarded against than it is in the wording of the rules. The ultimate protection, let the rules be what they may, lies only in thorough discipline, which there seems to have been a lack of in the vicinity of Silver Creek.

The gross earnings of the Union Pacific Railway Company for the six months ending with June were very nearly the same as those of the Northern Pacific for the 12 months ending with June. The Union Pacific has 4,519 and the Northern 2,718 miles of road. The first half of the year, however, earnings are much less than in the second half, and for the 12 months ending with June the Union Pacific and Northern Pacific earnings were:

	Union Pacific.	Northern Pacific.
Gross earnings.....	\$26,306,729	\$11,730,727
do. per mile.....	5,821	4,316

Thus the Union Pacific earned 35 per cent. more per mile than the Northern.

The net earnings of the Northern Pacific for the year were nearly 80 per cent. greater than those of the Union Pacific for the half-year, but the net earnings are very much less in the first than in the last half of the year, and for the twelve months ending with June they were for the two roads:

	Union Pacific.	Northern Pacific.
Gross earnings.....	\$9,654,087	\$5,574,293
Per mile.....	2,136	2,051

Thus the Northern Pacific thus early in its existence earned net per mile very nearly as much as the Union Pacific, in considering which, however, we should bear in mind that only about half the Union Pacific system can be called main line, against about two-thirds of the Northern Pacific.

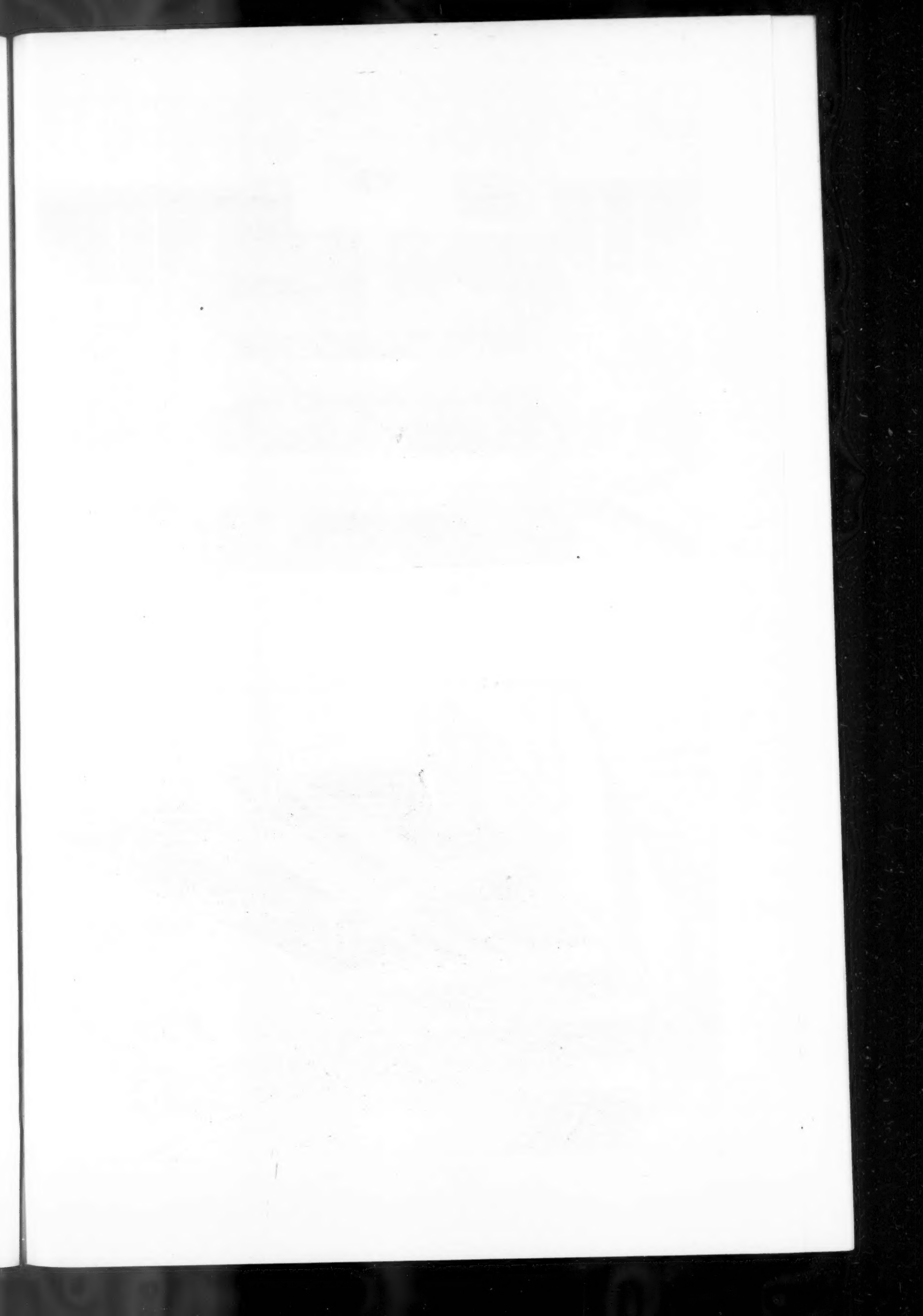
The prospect for a heavy rail grain movement this fall and the coming winter seems good, for stocks have accumulated at the Northwestern markets until there is nearly as much wheat there and a great deal more corn than there was at this time last year and about twice as much as there was two years ago. The water routes are already unable to carry all that is offered; their rates are very nearly equal to the rail rates, and shipments are likely to be forced upon the railroads.

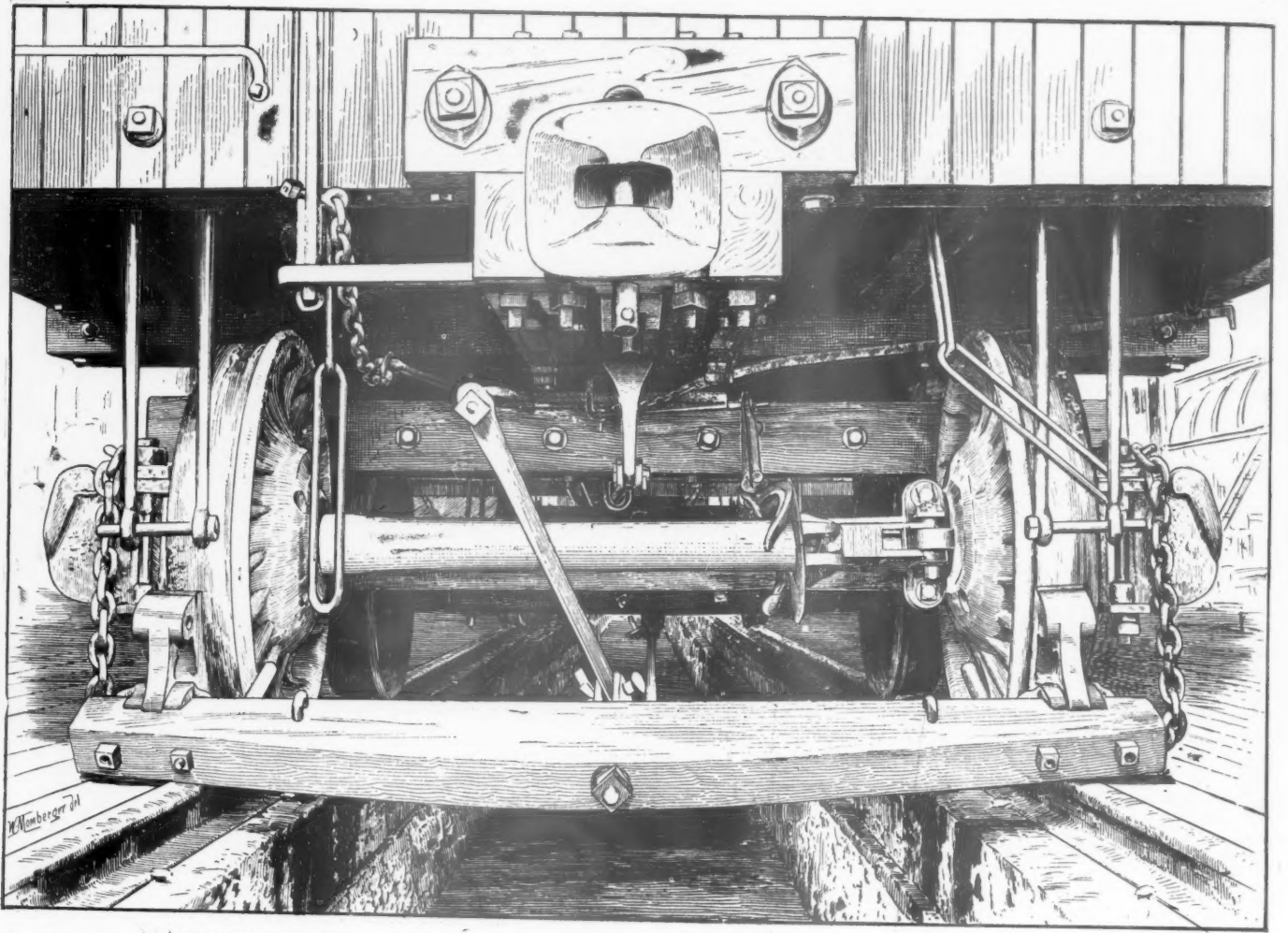
Duluth "beat its record" as a wheat receiver in the week to Sept. 11, when it received 1,169,906 bushels, the largest previously having been 1,014,000 in the week to Dec. 5 last year. Its receipts week before last were nearly 36 per cent. of the total wheat receipts of the eight Northwestern markets, and more than those of Chicago, Milwaukee and St. Louis together. It seems to be getting nearly all the spring wheat, for receipts at Chicago have ceased to increase and at Milwaukee have decreased.

The receipts of the winter wheat markets suffered a further decrease in this week, as usual at this season, but chiefly at St. Louis, which received 370,807 bushels, after having averaged 1,104,500 in the four weeks to July 31, and 634,000 in the four weeks to Aug. 28. Toledo keeps up better, but received only one-half its maximum, which was in the last week of July. Duluth has not yet received as much as the maximum weekly receipts of these places, but for the remainder of the season of navigation it seems likely to be the leading wheat market.

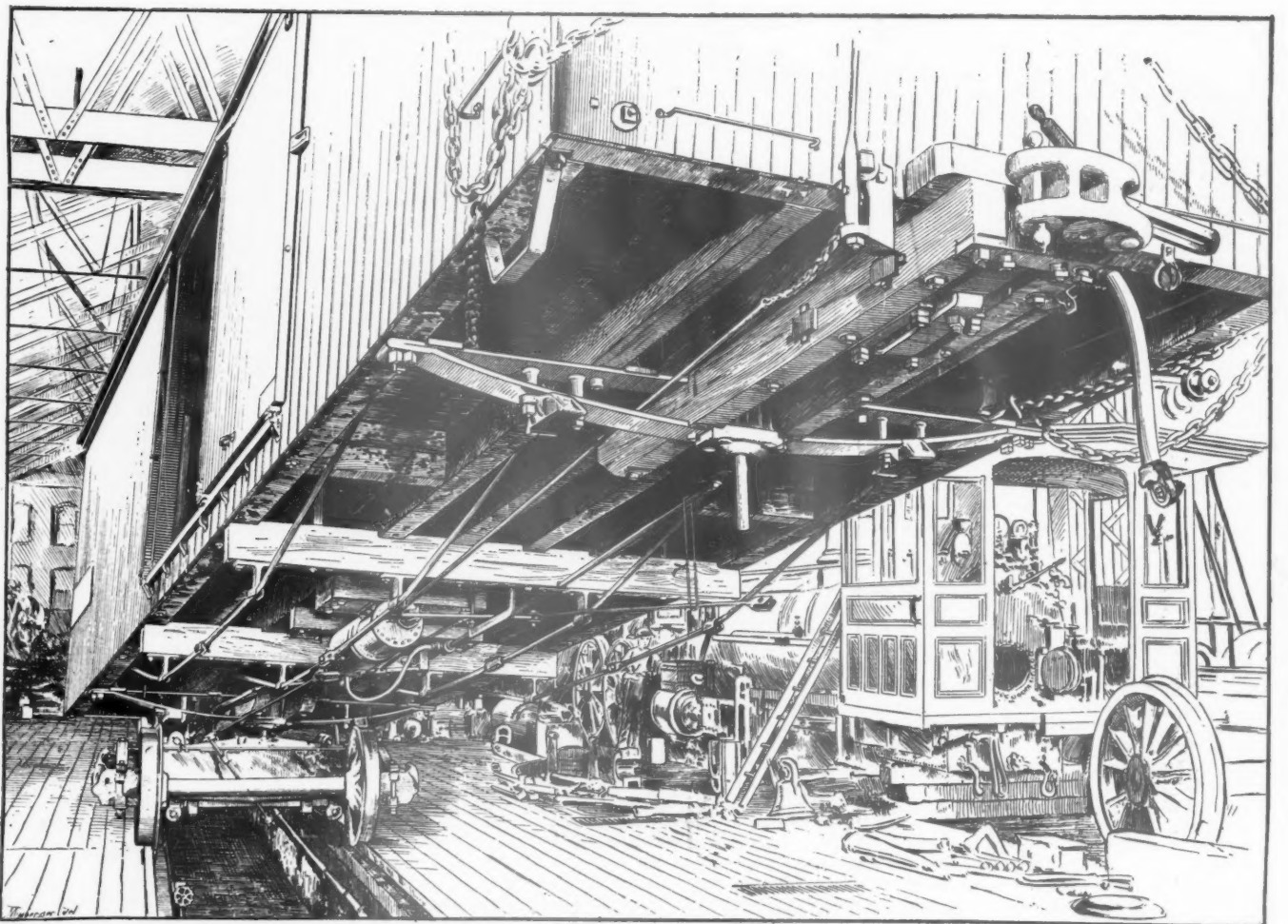
Rail grain shipments from the Northwestern markets have at last become what may properly be called large, amounting in the week to Sept. 11 to 2,511,636 bushels, which is much more than in any other week of this year since navigation opened. Lake and canal rates being very nearly as high as rail rates at the time, it may be assumed that the large increase in shipments was owing to the pressure of trade, and not to any considerable cutting of rates. Nearly two-thirds of the shipments were oats, which do not go by lake, but the wheat and corn shipments were much larger than they had been for a long time. The rail shipments in July averaged little more than a million bushels a week; in August they rose to 1,573,000; but this is three-eighths less than those of the week to Sept. 12, which were not equaled in July or August last year, and even not greatly exceeded in September, when a 10-cent rate prevailed, under which for six weeks the rail shipments were 19,000,000 bushels.

The Northwestern grain receipts were very large (8,834,275 bushels) in the week to Sept. 11, and though exceeded by more than a million bushels the week before, they were not equaled before that for three years, and in the whole history of the trade were equaled seven times—in four weeks of 1880 (including each of the three ending Oct. 16), and in

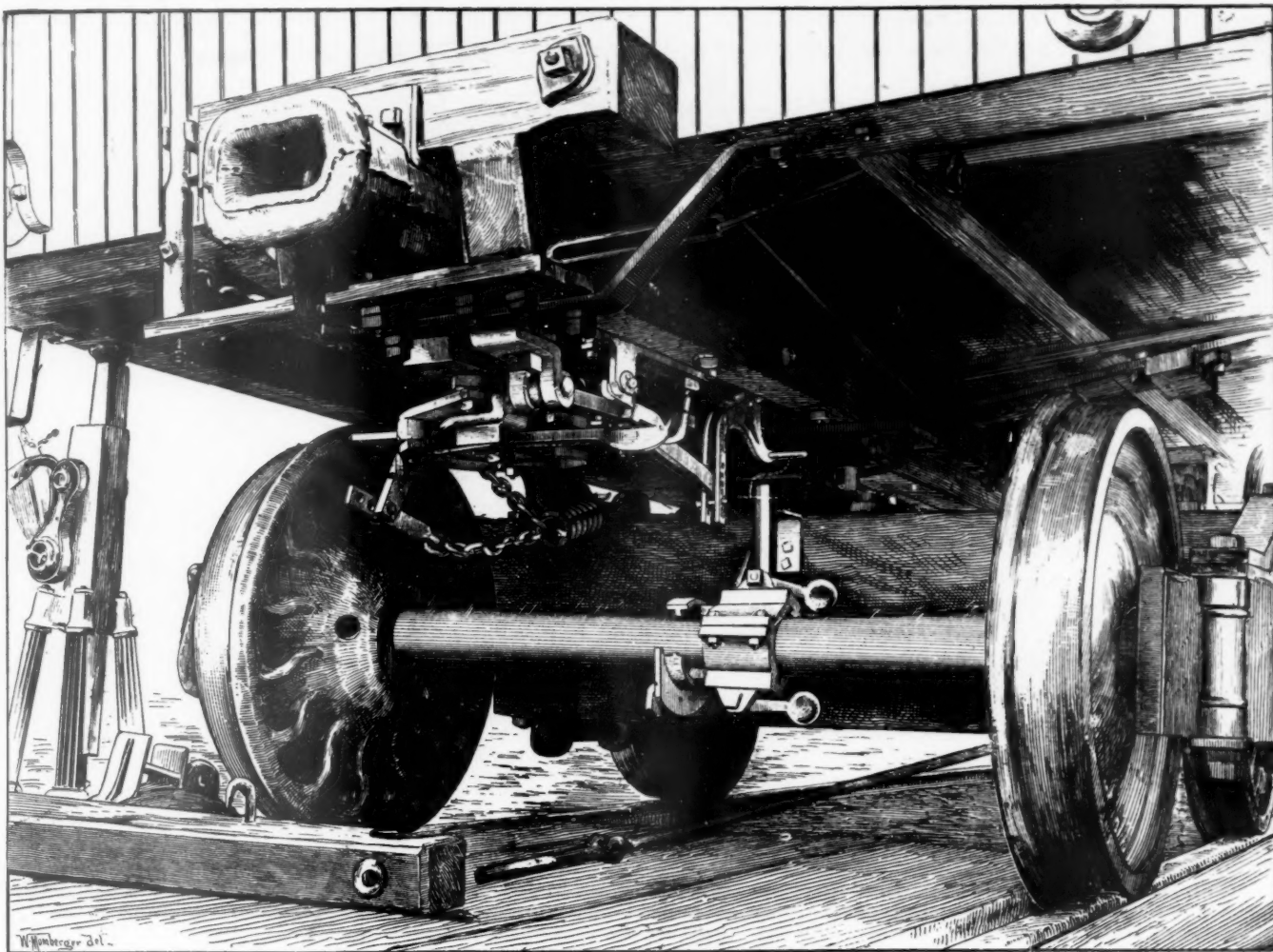




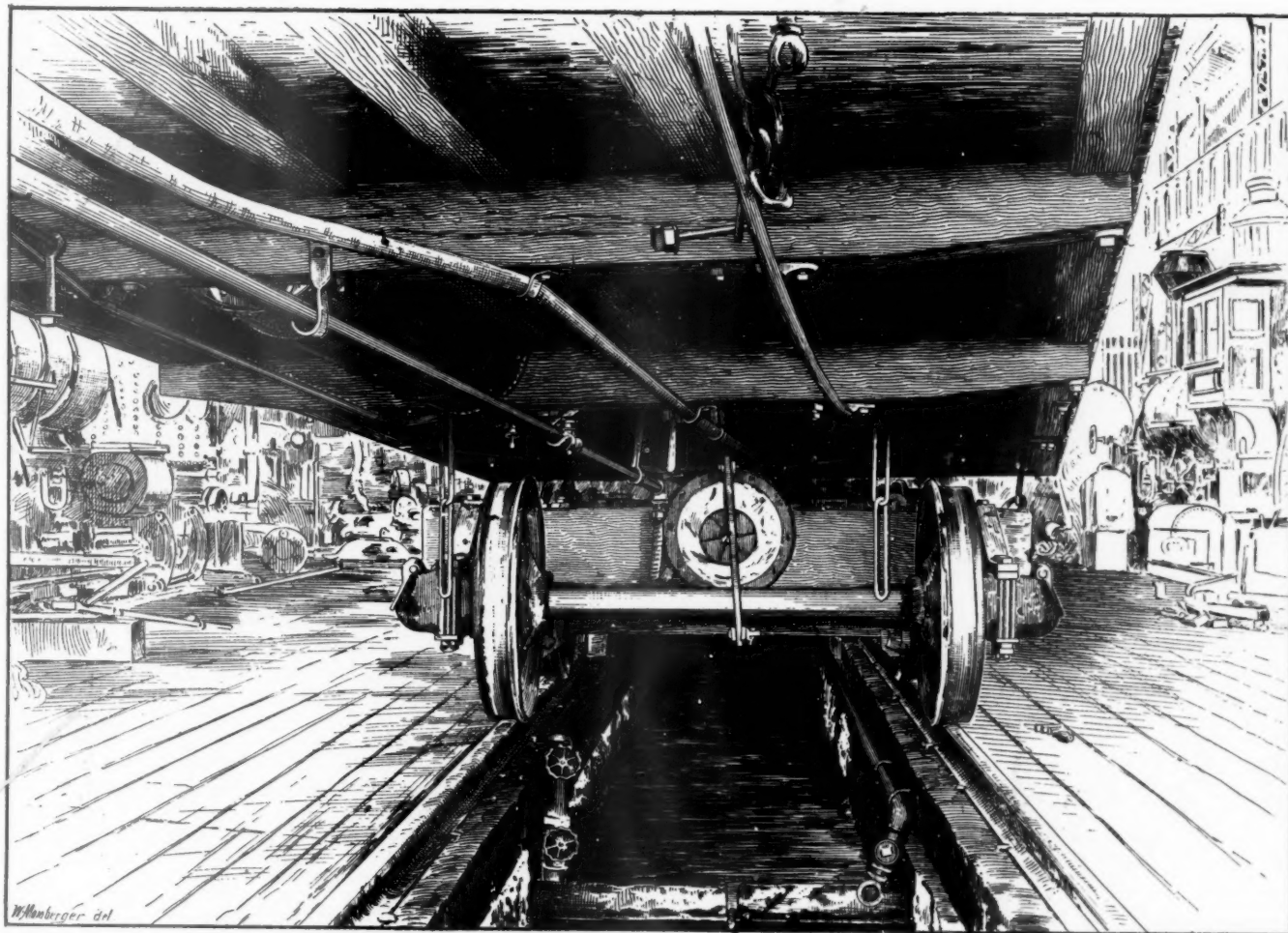
AMERICAN BRAKE—DIRECT BUFFER.



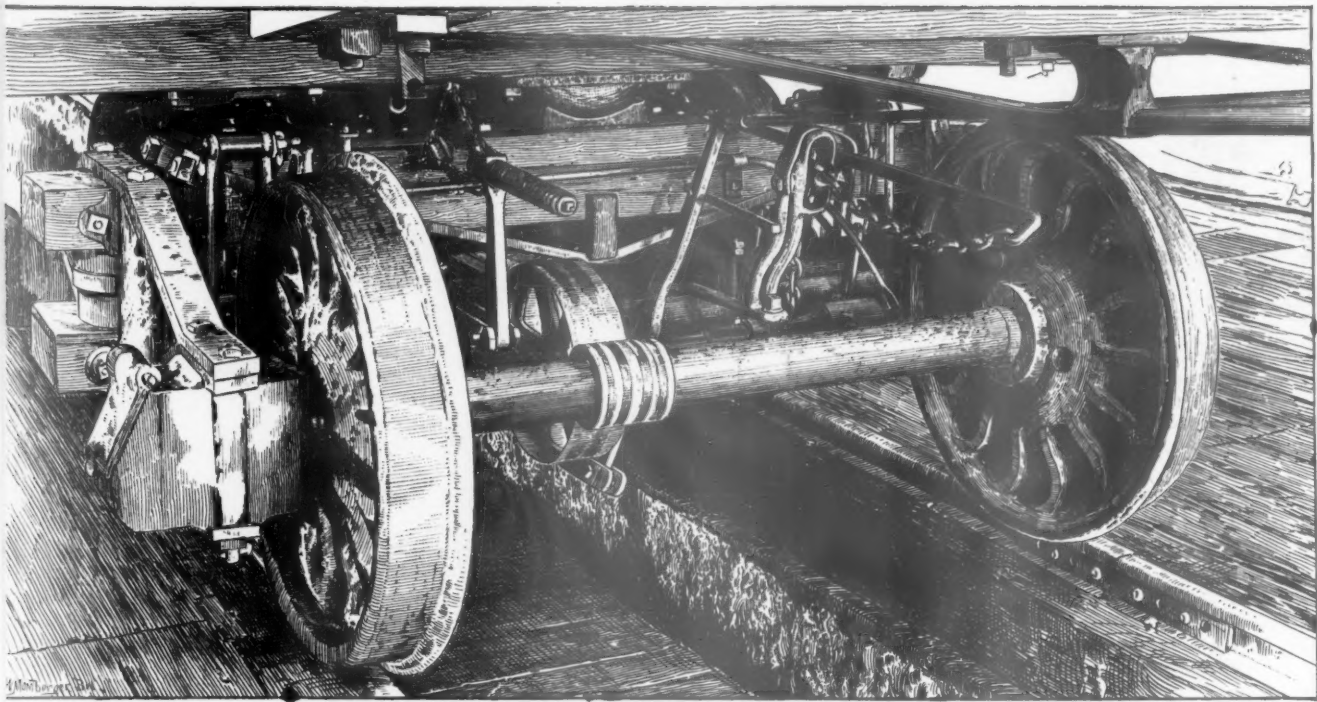
WESTINGHOUSE AUTOMATIC BRAKE.



ROTE BRAKE—DIRECT BUFFER.



EAMES AUTOMATIC VACUUM BRAKE.



WIDDIFIELD & BUTTON BRAKE—FRICTION BUFFER

THE FIVE FREIGHT TRAIN BRAKES

TESTED AT THE BURLINGTON FREIGHT TRAIN BRAKE TESTS,

JULY 13-AUG. 2, 1886.

NOTES.

The drawing of the AMERICAN brake is taken directly from the end of the car, with no other change than to drop the brake-beam so as to show the brake-gear.

The drawing of the ROTE brake shows the parts somewhat displaced by the body of the car being jacked up several inches, removing the bent lever under the body of the car from the bearing which it should have against the vertical lever, as indicated by the dotted line. The brake-beam has been removed.

The body of the WIDDIFIELD & BUTTON car has been lifted up several inches, to afford a better view for the camera, the displacement affecting only the chain just at the left of the centre-plates by which the friction pulley is pressed up against the axle. This chain and the rod attached should have a nearly horizontal pull. The brakes are inside hung.

The body of the WESTINGHOUSE car was necessarily lifted up very much to afford a view of the brake-gear. The brake-rod which runs to the front car will be seen disconnected, connecting at the rear with the lever by which both trucks at once are actuated. A fixed lever for equalizing the pressure on the rear truck will be seen behind the auxiliary reservoir.

The brake-gear of the EAMES car is duplicated on each truck, and the pipe immediately under the auxiliary reservoir supplies each at once.

each of the three ending with Sept. 15, 1883. Corn, wheat and oats receipts are all very large.

The sleeping-car porters are the last body of railroad men to form an association. They want more pay, and if they will agree to be content with what the companies give them, and not require to be paid also by the passengers whose berths they make up, they will receive the unanimous support of the public.

Lake and canal rates have gone down, 3½ cents per bushel for corn and 4 for wheat being recent contracts from Chicago to Buffalo, and 5½ and 5¼ from Buffalo to New York, a reduction of 2¼ cents on the through rate from the highest rates about ten days earlier, yet remaining good rates for the season. A falling-off of shipments has caused the reduction in rates.

Record of New Railroad Construction.

Information of the laying of track on new railroad lines is given in the current and the last number of the *Railroad Gazette* as follows:

Burlington, Cedar Rapids & Northern.—Track laid on the Sioux Falls extension from Ellsworth west 10¼ miles to Rock Rapids, Ia.

Chicago & Northwestern.—The James River Valley line is complete from Houghton, Dak., north to Oakes, 26 miles.

Chicago, Burlington & Quincy.—Track is laid on the branch from Aurora, Neb., northwest to Hastings, 30 miles.

Chicago, Milwaukee & St. Paul.—The Hastings & Dakota Division is extended from Ipswich west to Bowdle, Dak., 30½ miles.

Fremont, Elkhorn & Missouri Valley.—The Lincoln Branch is extended from Platte southward to Wahoo, 17 miles.

Greenville & Laurens.—Extended northwest 2 miles to Greenville, S. C.

Kansas & Colorado.—The first track is laid, from Salina, Kan., north by west to Fowler's, 40 miles.

Minneapolis, Sault Ste. Marie & Atlantic.—Extended from Prentice, Wis., east 13 miles.

Ohio River.—Extended from a point 7 miles north of Point Pleasant, W. Va., north up the left bank of the Ohio to Clifton, 5 miles.

St. Paul, Minneapolis & Manitoba.—The Devil's Lake Extension has been extended 30 miles to a point 110 miles west of Devil's Lake.

Sinnemahoning Valley.—Five short branches have been completed, measuring in the aggregate 6 miles.

Verdigris Valley, Independence & Western.—Extended from Yates Centre south to Independence, Kan., 50 miles.

Wilmington & Weldon.—The Wilson Cut-off has been extended 5 miles to Benson's Station, N. C.

This is a total of 235 miles on 12 lines, making 3,674 miles reported so far this year. The new track reported to the corresponding date for 15 years has been:

Miles.	Miles.	Miles.
1886... 3,674	1881... 4,774	1876... 1,677
1885... 1,606	1880... 3,607	1875... 804
1884... 2,619	1879... 2,324	1874... 1,101
1883... 3,965	1878... 1,267	1873... 2,778
1882... 7,383	1877... 1,396	1872... 4,970

Foreign Railroad Notes.

It is officially announced that the management of the Hungarian state railroads has decided to raise the rates on freight of the higher classes.

There will be courses of lectures on railroads at the Breslau University during the next winter semester, Heinsius lecturing on "The Political Economy of Railroads, and especially Rates," Krönig on "The Administration of the Prussian State Railroads," Dr. Eger on "Prussian Railroad Law," and Jordan on "Railroad Operation."

TECHNICAL.

The Car Shops.

The Jones car works in Schenectady were sold at public auction Sept. 13 under foreclosure of a mortgage held by T. W. McCamus, as trustee for the holders of the mortgage bonds. The works were bid in for \$30,000 by Garrett S. Veeder for the bondholders. The amount of the indebtedness is \$58,466.60. The sale includes the buildings and their contents, consisting of boilers, engines, machinery and shafting. About 12 acres of ground go with the buildings. The plant is valued at about \$150,000.

The Rail Market.

Steel Rails.—There are no changes in quotations, which are \$34 to \$35 per ton at Eastern mills, but orders for the winter are said to have been taken at a very slight reduction, as is often done to insure work through the winter.

Old Rails.—Quotations are \$21.50 to \$22 for American in the interior, and \$20.50 to \$20.75 for old steel in Philadelphia.

The McKee Car Coupler Co.

This corporation has been organized for the manufacture and sale of the McKee automatic car coupler, which is in use on several railroads. Illustrations of it, with the latest improvements, appeared in the *Railroad Gazette* for July 23, 1886. The directors and officers of the new company are Daniel Runkle, President; T. L. McKee, Vice-President and General Manager; W. H. Hulick, Secretary; A. D. Chidsey, Treasurer; Chas. Stewart and James Smith. The General Agent, Mr. J. H. Sheldon, has been long a railroad officer in various positions.

Home News from Abroad.

In the United States they are adopting the European fashion, and fitting tail rods to the pistons of their locomotives. The shops of the Great Western Division, Grand Trunk, in Hamilton, Ont., are now building some heavy passenger engines. The engines have 6 ft. drivers, and 19 in. x 24 in. cylinders. In order to give proper support to the piston, and prevent it dragging on the bottom of the cylinder, the piston rod is prolonged through the front cover, and therefore supported at each end by suitable bushes and glands. "The result of the experiment on the Great Western

will be awaited with considerable interest," we are told. We do not see what there is to wait for. As far as is known, the presence or absence of tail rods makes no difference whatever; at least, that is the verdict of English locomotive superintendents. But, of course, their views are not of much account, as they really do not know how to build locomotives. Even moderate perfection in that class of work exists, as is well known, only in the United States.—*The Engineer*.

New Locomotives on the Philadelphia & Reading. The Baldwin Works have delivered 10 locomotives recently ordered by the Receivers, five of which are now running with passenger trains, together with five others recently built at the company's Reading shops to replace old engines. The following account of the new engines is published:

"The new passenger locomotives are more powerful than any ever owned by the company. They are all supplied with the Wooten fire-box. A few slight changes have been made, the most notable in the fire-box. On all engines previously built the top of the fire-box sloped down toward the furnace door. In the new machines there is no slope, but the top is continued straight to the front of the fire-box. This secures a rather larger heating area, and consequently increases the power.

"The new engines have been tried and give perfect satisfaction. It is said they can run a mile in 42 seconds with a loaded train. It is believed, should an emergency require it, a mile could be made in 40 seconds or perhaps a little less. There is no probability that such speed will be required.

"Two of them are now working on the Philadelphia & Atlantic City road, which at one time was very deficient in good motive power. Six or eight cars was the maximum an engine could haul and make schedule time, but the new locomotives can take 18 cars through on time. The other engines are engaged on the main line, the Lebanon Valley and other divisions."

Train Telegraphing.

A paragraph in an electrical journal states that "a contract has recently been signed between the Lehigh Valley Railroad and the Phelps Induction Telegraph Co. for the application of the Phelps system of railway telegraph to the entire system of road operated by them. The work of equipment has already begun, and the first section of about one hundred miles from Perth Junction to Mauch Chunk will be in operation in a few weeks. The wires will be worked duplex, being used as ordinary Morse wires for local telegraph business and for train service simultaneously." The announcement is in some of its details somewhat premature, probably, but the experiments are going on, and indicate the increasing interest in this question. So far, the reports of the practical working of the induction system of telegraphing have been uniformly favorable to it.

Delicately Put.

"In comparing the relative advantages of American and English designs, the authors pointed out that, while the latter possess undoubted security, they involve a sacrifice of economy," says *Engineering's* report of a paper by W. Shelford and A. H. Shield, on "Some Points for Consideration of English Engineers with Reference to the Design of Girder Bridges," before the British Association.

THE SCRAP HEAP.

Frank and Candid.

The Europe, North America & China Railroad and Navigation Company. The public are respectfully informed that the above title defines the ultimate limits rather than present scope of the railroad, which at present consists of a confederation of bankrupt lines running to unprogressive villages situated in the swampiest and least fertile portions of several states. In order to avoid any inconvenient responsibility, the management is vested in four presidents, several general managers and superintendents, and any number of receivers.

In order to inculcate habits of sobriety and frugality, the stockholders are paid by heavy assessments, and the wages of the subordinate employees and the interest on the bonds are taken care of by a genius for finance who sells the stock short, and whose sole principle of railroad working is embodied in the words "Reduce expenses."

A few of the rails are steel. These were laid some time ago, and were paid for in bonds which are now used as a cheap and variegated wall paper. The greater portion of the track is laid with iron rails whose age and varied service on other roads entitles them to a greater degree of respect than can be found in this democratic country. These rails average about 9 ft. long, and are spaced with an ample allowance for expansion at the joints, so as to make a given number of rails cover as much ground as possible.

Most of the ties have also seen considerable service, and many are fast resolving themselves into the soil from whence they sprung. The costly experiment of buying new ties is avoided, the management being strictly conservative (the literal meaning of this word being "keep all you get").

The Wily Passenger Agent.

It was a neat bit of railroad strategy that placed a Northern Pacific folder beneath the covers of guests at the banquet table last evening [to celebrate the advent of the St. Paul & Manitoba Co. in Montana]. Nothing disconcerted Mr. Hill very happily turned it to account, referring to it as a decidedly handsome time card, "but," said he, "there will soon be an opportunity to make a new one. I think this one is about 12 hours too long between Helena and St. Paul." [Prolonged applause.]—*Helena Herald*, Sept. 11.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Chicago & Eastern Illinois, annual meeting, at the office in Chicago, Oct. 5, at noon.

Louisville & Nashville, annual meeting, at the office in Louisville, Ky., Oct. 6, at noon.

Ohio & Mississippi, annual meeting, at the office in Cincinnati, Oct. 14. Transfer books close Sept. 18.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Connecticut River, 2 per cent., quarterly.

Lehigh Valley, 1 per cent. quarterly, payable Oct. 15.

Nashville, Chattanooga & St. Louis, 2 per cent., payable Oct. 10.

Oregon Railway & Navigation, a regular dividend of 1½ per cent., quarterly, and an extra dividend of ¼ per cent., payable Oct. 1.

Railroad and Technical Conventions.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The General Time Convention will hold its fall meeting in New York, on Wednesday, Oct. 18.

The Western Society of Engineers holds regular meetings

at its hall, No. 15 Washington street, Chicago, at 7:30 p. m. on the first Tuesday of each month.

Foreclosure Sales.

The **Port Jervis & Monticello Railroad** will be sold at the Delaware House, Port Jervis, N. Y., Nov. 6, at 2 p. m., to satisfy claims of judgment creditors.

Sleeping-Car Porters' Association.

About 50 sleeping-car porters from the Baltimore & Ohio, New York Central and Pullman Palace Car Companies, met Sept. 21 in St. Louis, for the purpose of forming an organization for mutual aid and protection. The meeting resolved itself into a permanent organization under the name of Sleeping-Car Porters' Association, and decided to hold a mass convention of the 500 porters in the city Sept. 22, and draw up a petition to be signed by all members asking for better pay and forward it to the headquarters of the several companies.

National Association of General Passenger and Ticket Agents.

The semi-annual meeting was held at the Hotel Brunswick, New York, Sept. 21, John N. Abbott, New York, Lake Erie & Western, President, and A. J. Smith, Cleveland, Columbus, Cincinnati & Indianapolis, Secretary. There were representatives from 65 railroads present, namely:

John N. Abbott, New York, Lake Erie & Western.
J. H. Allaire, Hudson River People's Line Steamers.
T. C. Anderson, New York, Ontario & Western.
C. P. Atmore, Louisville & Nashville.
William S. Baldwin, Louisville, New Albany & Chicago.
J. H. Best, Jr., St. Louis, Keokuk & Northwestern.
O. H. Briggs, New York, Providence & Boston.
Theodore Butterfield, Utica & Black River.
E. B. Byington, Lehigh Valley.
T. P. Carpenter, Lake Superior Transit Co.
S. W. Cummings, Central Vermont.
George L. Connor, Old Colony Steamboat Co.
W. L. Danley, Nashville, Chattanooga & St. Louis.
I. I. Demarest, New York, Susquehanna & Western.
A. C. Dawes, Kansas City, St. Joseph & Council Bluffs.
M. W. Durfee, Providence & Worcester.
T. M. Emerson, Atlantic Coast Line.
I. S. Emery, Buffalo, Rochester & Pittsburg.
H. J. Falkenbach, Columbus, Hocking Valley & Toledo.
D. J. Flanders, Boston & Maine.
E. A. Ford, Pennsylvania.
H. N. Gilson, Tuckerton.
A. H. Hanson, Illinois Central.
A. S. Hanson, Boston & Albany.
F. E. Harrison, New Haven & Derby.
O. W. Bromwell, Florida Southern.
B. F. Horner, New York, Chicago & St. Louis.
Solomon Haas, Atlantic Coast Line.
D. M. Kendrick, New York Central & Hudson River.
E. C. Luce, Lake Shore & Michigan Southern.
James Littlefield, Boston & Bangor Steamship Co.
C. L. Lockwood, Grand Rapids & Indiana.
A. O. McDonnell, Florida Railway & Navigation Co.
Charles M. McFaddin, Manhattan Railway.
L. T. Myers, Seaboard & Roanoke.
J. W. Morse, Union Pacific.
M. R. Moran, Jacksonville, Tampa & Key West.
Henry Monett, West Shore.
F. W. Popple, Providence & Stonington Line.
E. A. Ray, New Haven & Northampton.
O. W. Ruggles, Michigan Central.
C. S. Stebbins, Union Pacific.
A. J. Smith, Cleveland, Columbus, Cincinnati & Indianapolis and Indianapolis & St. Louis.
J. L. Taylor, Richmond & Danville.
W. A. Thrall, Chicago & Northwestern.
J. R. Watson, Fitchburg.
C. A. Warren, St. Paul, Minneapolis & Manitoba.
J. R. Wood, Pennsylvania.
B. W. Wrenn, East Tennessee, Virginia & Georgia.
J. W. Burdick, Delaware & Hudson Canal Co.
J. S. Lazarus, Indianapolis, Decatur & Springfield.
E. C. Watson, Connecticut River.
C. A. Waite, formerly of the Worcester, Nashua & Rochester, and C. J. Waller, formerly of the Mobile & Ohio, were chosen honorary members. E. C. Luce, E. A. Ford, and W. A. Thrall were appointed a committee to draft resolutions on the death of J. W. Carey, formerly General Ticket Agent of the Lake Shore, the resolutions to be considered adopted as soon as drawn up and forwarded to the family of the deceased.

The principal topic discussed was the question of adopting a uniform system of coupon tickets on all the roads in the country. Henry Monett, of the West Shore; J. L. Taylor, of the Richmond & Danville; O. W. Ruggles, of the Michigan Central; D. J. Flanders, of the Boston & Maine, and W. A. Thrall, of the Chicago & Northwestern railroads, were appointed a committee to devise a system that could be generally adopted.

A request from Marcus Meyer, W. R. Hayden, Daniel Frohman, Frederick Stinson, John Davis and John A. McCaul that the amount of baggage allowed theatrical companies be increased, and that theatrical rates be made for parties of less than 10 people was referred to the various district associations.

The Committee on Mileage Tickets, from which an important communication had been anticipated, had not fully prepared its report, and were given until the next meeting to do so. Washington and the third Tuesday in March were selected as the place and time for holding the next semi-annual meeting.

New England Railroad Club.

The regular monthly meeting of the club will be held on Wednesday, Oct. 13, 1886, at 7:30 p. m.

Subject for discussion: "Interchange of Cars." The discussion will have especial reference to the inspection of cars at interchange points, the defects in ladder rounds and handles, defective brake attachments, gauge of wheels, defective running boards, etc., and how far it is possible to remedy these defects.

Is it more rigid inspection, or more thoroughly constructed cars, or cars kept in more perfect condition, that is wanted to overcome existing difficulties in the interchange of cars? In view of the urgent necessity of immediate action in this matter, it is thought desirable to take this subject up and make a determined effort to arrive at some conclusions as to methods and plans for the adjustment of these perplexing questions. Superintendents of rolling stock, master car-builders, inspectors, and all others interested are especially invited to be present, or if unable to do so to communicate their views in writing.

ELECTIONS AND APPOINTMENTS.

Atlantic Coast Line.—E. C. Dunn is appointed Assistant Engineer of Roadway, with office at Wilmington, N. C.

Baltimore & Harrisburg.—A. W. Eichelberger, Hanover, Pa., is President of this company, the successor of the Hanover Junction, Hanover & Gettysburg and the Bachman Valley companies.

Central Iowa.—E. H. Chapman has been appointed Superintendent of Telegraph and Chief Train Dispatcher, in place of P. C. Eldredge, resigned.

Central Traffic Association.—Richard Reese, formerly private secretary of Mr. F. Broughton, of the Chicago & Atlantic, has been made live stock agent at Pittsburgh.

Cherryvale, Paola & Kansas City.—The first directors are: Chas. A. Mitchell, Ed. L. Joyce, B. F. Crandall, James W. Willis, Joseph H. Butler, William H. Brown, Wesley A. McCormack, Cherryvale, Kan.; J. M. Allen and W. W. Work, Erie, Kan.; Thos. M. Carroll, H. A. Miller and W. D. Gresson, Paola, Kan. C. A. Mitchell, President; H. A. Miller, Vice-President; J. M. Allen, Treasurer; W. D. Gresson, Secretary.

Chicago, St. Paul, Minneapolis & Omaha.—M. F. Bagley has been appointed Assistant General Freight Agent, with office in St. Paul.

Evansville & Chicago.—Mr. J. H. Pearson, late Chief Engineer and Superintendent of Road Department of the Louisville, New Albany & Chicago, has been appointed Chief Engineer, and expects to begin the surveys by Sept. 27.

Flint & Pere Marquette.—Arthur Patriarch has been appointed General Freight Agent again, resuming the place which he vacated last May to become Division Freight Agent of the Michigan Central.

Haverhill & Lawrence.—The following temporary directors were elected Sept. 20, at Haverhill, Mass.: John Pilling, Charles W. Morse, Oscar D. Cheney, James H. Carleton, George A. Hall, Daniel Goodrich, S. H. Gale, W. B. Thom, Arthur D. Veasey, Levi Taylor, H. H. Hale, C. H. Tenney, C. E. Wiggins, John L. Hobson, Treasurer; Charles Corliss, Clerk. It was voted to draw up articles of organization, and apply for a charter at once.

Indiana, Bloomington & Western.—Wm. Bedford has been appointed Master Car Painter at the Indianapolis shops to succeed J. C. Webb, who has gone to the Malleable Iron Works, in Indianapolis.

Kansas City, Memphis & Birmingham.—General Manager Nettleton announces the following appointments: Chief Engineer, John H. Grant, office at Birmingham, Ala.; Superintendent of Transportation, John H. Sullivan, office at Memphis; General Freight Agent, M. L. Sargent; General Passenger Agent, J. E. Lockwood. All but the Chief Engineer are officers of the Kansas City, Ft. Scott & Gulf.

Missouri, Kansas & Texas.—Mr. William O'Herin was appointed Aug. 21, Master Mechanic of the Missouri, Kansas & Texas Railway and branches, north of Denison.

Missouri Pacific.—Oscar G. Murray has been appointed Freight Traffic Manager, with office at St. Louis. The office of Traffic Manager of the Southern Division is abolished.

Mobile & Ohio.—Mr. M. Sweeney, who has been Purchasing Agent of the Richmond & Alleghany Railroad, and chief clerk to the General Manager, has been appointed Manager of Transportation, with office in St. Louis, to date from Oct. 1. Mr. Sweeney went to Richmond from St. Louis in 1882 and is highly esteemed there, and considered a thoroughly educated railroad man.

John Howard has been appointed Traveling Passenger Agent for the territory south of the Ohio River, in place of R. O. Bean. Mr. Howard's address for the present is at Corinth, Miss.

Nashville, Chattanooga & St. Louis.—At the annual meeting in Nashville, Tenn., Sept. 15, the following were chosen directors: J. W. Thomas, G. M. Fogg, A. H. Robinson, A. S. Colyar, I. T. Rhea, E. B. Stahlman, Nashville; M. H. Smith, Louisville, Ky.; T. W. Evans, Ex. Norton, J. H. Iman, New York; Thos. Lipscomb, Shelbyville, Tenn.; E. L. Jordan, J. W. Sparks, Murfreesboro, Tenn.; G. A. Washington, Cedar Hill, Tenn.; J. G. Aydelott, Tullahoma, Tenn., all re-elected; J. W. Thomas, President; J. H. Ambrose, Secretary and Treasurer.

Newport News & Mississippi Valley.—E. T. Smith has been appointed Superintendent of Transportation, and will have charge of the distribution of cars.

New York, Woodhaven & Rockaway.—Austin Corbin, J. R. Maxwell, H. W. Maxwell and Horace W. Graves have been chosen directors in place of A. S. Hatch, W. D. Hatch, D. D. Conover and T. W. Orcott, resigned.

Northern Pacific.—At the annual meeting, Sept. 16, the following were elected directors: August Belmont, Frederick Billings, John N. Brookman, John C. Bullitt, Benj. P. Cheney, James C. Fargo, John H. Hall, Robert Harris, Brayton Ives, Johnston Livingston, Thos. F. Oakes, J. Lewis Stackpole, and Charles B. Wright. The new directors are: Messrs. Brookman, Fargo and Ives, who represent New York and Philadelphia stockholders, and take the places of John W. Ellis, R. G. R. Bolton and N. P. Halliwell. The old officers were all re-elected: Robert Harris, President; T. F. Oakes and James B. Williams, Vice-Presidents; Samuel Wilkeson, Secretary; Robert Lenox Belknap, Treasurer.

Paris, Marshall & Northern.—Capt. L. W. Lloyd is General Superintendent of this Texas railroad, with office at Marshall.

Toledo & South Haven.—Lucius Clark has been chosen President and John Ihling re-elected Superintendent.

Philadelphia & Northeastern.—This company, organized Sept. 15 to build an elevated railroad from Jenkintown to Front and Westmoreland streets, in Philadelphia, chose George H. Boker, President; Frederick B. Esler, Vice-President, and Ford C. Stevens, Secretary. The following were elected directors: George H. Boker, Charles B. Wright, Henry C. Gibson, James A. Wright, Frederick B. Esler, Samuel R. Shipley and Walter Wood.

Philadelphia & Reading.—The directors, Sept. 22, chose Austin Corbin President, to succeed Franklin B. Gowen, resigned.

St. Louis, Arkansas & Texas.—F. A. Lister was appointed Master of Transportation of the Texas Division, Sept. 10, with office at Tyler, Tex., and the office of Division Superintendent of the Texas Division was abolished.

Savannah, Florida & Western.—Wm. Pearson Hardee has been appointed General Freight and Passenger Agent of this and the Charleston & Savannah, in place of James Taylor, resigned. Mr. Hardee, who is 39 years old, has been Treasurer of the company since its organization, in 1879, and has been in the service of the railroad for 20 years.

Mr. J. Moultrie Lee, who has been Treasurer of the Charleston & Savannah several years, becomes Treasurer of the Savannah, Florida & Western also, and the Treasurer's office of the Charleston & Savannah is removed from Charleston to Savannah. The change took effect Sept. 20.

Sinnehoming Valley.—Mr. E. O. Cheney, who has been Treasurer, has been appointed Auditor, and Mr. C. D. R. Stowitts General Passenger and Freight Agent, with office in Buffalo, N. Y. Mr. A. Lenbaum, formerly of the Buffalo

& Southwestern, has been appointed Roadmaster, with office at Keating Summit, Pa.

Toledo & Ohio Central.—The following officers were elected at Toledo on Sept. 18: President, Stephenson Burke, Cleveland; Vice-President, C. J. Canda, New York; General Manager, J. M. Ferris, Toledo; Secretary and Treasurer, John F. Cline, Toledo; Auditor, John Landgraf, Jr., Toledo.

Western Society of Engineers.—At the meeting, Sept. 7, the following were elected Members: James Wilbur Carrier, Assistant Engineer, Chicago & Alton Railroad, Chicago; Eugene Dietzgen, manufacturer of engineers' supplies, No. 774 Sedgwick street, Chicago; John Herron, Assistant Engineer, Montana Central Railway, Helena, Mont.; Edwin A. Hill, Acting Chief Engineer, Indianapolis, Decatur & Springfield Railway, Indianapolis; Otto Lubring, manufacturer of engineers' supplies, No. 749 North Wells street, Chicago; Otto Wm. Meyenburg, manufacturer, No. 185 Dearborn street, Chicago; George Rosen Simpson, Patent Office, Washington, D. C.; John Townsend, engineer and manufacturer, No. 185 Dearborn street, Chicago. Mr. E. H. Beckler was transferred from the grade of Junior to that of Member.

Western Traffic Association.—Mr. J. N. Faithorn was elected Commissioner of this reorganized association, which succeeds the Western Freight Association.

West Side & Mendocino.—The first directors are Charles Crocker, Timothy Hopkins, Ariel Lathrop, W. U. Huntington and F. S. Douty.

Wichita, Cedarville & Southwestern.—The incorporators are: N. F. Niederlander, A. W. Oliver, J. W. Richards, Amos Harris, M. W. Levy, Thomas Harris, L. C. Hamilton, P. S. Smith and F. A. Russell. Office at Wichita, Kansas.

United States Transportation Co.—V. A. Tuell has been appointed Superintendent, with office in Chicago.

PERSONAL.

—Seabury S. Gould, President of the Goulds Manufacturing Co., of Seneca Falls, N. Y., died at Watch Hill, R. I., Sept. 4, aged 74.

—Mr. B. A. Cunningham, Master of Trains of the East Tennessee, Virginia & Georgia Railroad, died at Macon, Ga., Sept. 2, aged 26.

—It is reported that Mr. H. S. De Pew, Joint Agent of the Central Traffic Association at St. Louis, has been offered the position of General Traffic Manager of the Mobile & Ohio, and will probably accept it.

—Mr. Paul Morton, who is to succeed Percival Lowell as General Passenger Agent of the Chicago, Burlington & Quincy, is a son of Hon. J. Sterling Morton, one of the leading lawyers of Nebraska, and has been in the service of the Burlington for 14 years, from the age of 15, becoming Assistant General Freight Agent when he was only 21.

—At the banquet in Helena, Mont., to J. J. Hill, President of the Manitoba Company, the engineer was not forgotten, as he usually is on such occasions. Col. J. T. Dodge, Chief Engineer of the Montana Central, responded to a toast, and so well that the Helena Herald says that "aside from Mr. Hill, no one was so attentively listened to on the one topic uppermost in the minds of his hearers."

—Capt. I. S. Hodgson, an old sailor, but for 21 years in railroad service, most of the time as a passenger agent of the Pennsylvania Railroad at Chicago, but for several years in charge of the Union Pacific land office in Chicago, is about to go to Los Angeles, Cal., where he will be passenger agent of the Union Pacific. He is a very warm-hearted and much beloved man.

TRAFFIC AND EARNINGS.

Northwestern Traffic Association.

Meetings were held in Chicago Tuesday and Wednesday of this week to receive the report of the committee on reorganizing this Association and discussing it. An adjournment was had Wednesday without reaching a conclusion.

Western Passenger Association.

Meetings were held three days last week in Chicago to arrange for this Association, without reaching a conclusion.

The agreement presented and discussed provided that the business to be pooled is that which goes to or comes from points located on and passing through a line drawn from Minneapolis, Minn., along the western bank of the Mississippi River to St. Louis, Mo., inclusive, as the eastern boundary line, which business has its origin or destination at points located on or which passes through a line drawn from Yankton, Dak., along the eastern bank of the Missouri River to the southeastern corner of Nebraska, thence west along the southern boundary line of Nebraska to the southwest corner of that state, termed hereinafter the western boundary line, except business of any line or from strictly local stations on its own, operated, leased or controlled lines on or east of the eastern boundary line or on or west of the western boundary line. Business is also to be excepted from the pool which is ticketed through to or from points north of a line from the southwest corner of Dakota; thence east along the southern boundary of Dakota to the Missouri River; thence along the Missouri River to Yankton, Dak.; thence from Yankton across the Chicago, St. Paul, Minneapolis & Omaha Railway, at Le Mars, Ia., by routes crossing the above described line, which business has its origin or destination at points located on or which passes through the eastern boundary line.

The lines interested agree to divide their gross earnings, computed at the established rates, for that portion of their roads lying between the eastern and western boundary lines described above, on all passenger traffic originating at or destined to junction points of their roads, including their own, operated, leased or controlled lines west of the western boundary line, with other roads not party thereto, and junctions between themselves, west of the western boundary line, which has origin or destination at or passes through the eastern boundary line. The percentage of such earnings to be allotted to each party shall be fixed by the Commissioner, subject to appeal by any interested party, to the Executive Committee at its first meeting after such percentages are declared, which meeting shall be held not later than 30 days thereafter, and if not then satisfactorily adjusted, shall be submitted to and fixed by arbitration, with the further provision that the percentage so fixed may in the same manner be changed from time to time on the request of an interested party, but not oftener than once in six months.

There shall also be appointed a sub-committee, consisting of the general passenger agents of the several companies, which sub-committee shall be charged with the execution of all orders and directions that may be given by the Executive Committee, and no orders or directions in regard to the passenger traffic covered and affecting any party to it shall be given, except through said sub-committee, who shall be held directly responsible for the carrying out of the orders of the Executive Committee and Commissioner. Said sub-committee

shall meet from time to time for the transaction of all business that may come within their jurisdiction as general passenger agents, and which they may be authorized to transact and shall act under the same rules and organization as the Executive Committee. If said sub-committee cannot agree upon any measures that may come before them, the Commissioner shall decide the question and present a report to the Executive Committee, stating the points of disagreement and reasons advanced therefor by each of the parties, and giving the reasons for his decision.

No commission or side cut shall be paid at Association points upon any kind of ticket issued by Association lines, regardless of whether such ticket reads to or through any Association point. Any payment of any commission or consideration of any nature whatever at any Association point shall subject the offending line to a fine of \$500 on each ticket on which such commission or consideration is paid. No agent of any of the associated lines at any Association point shall be paid commissions instead of salary. No agent of any of the associated lines at any Association point shall be paid a salary, or commission in lieu of salary, to exceed \$3,000 per year.

No agent of any Association line shall be permitted to divide his salary, or personal commissions which he may receive from connecting lines, with any ticket broker or anybody else at Association points for the purpose of controlling any passenger business.

The differences of opinion concerned chiefly the boundaries of the territory and the methods of awarding percentages. The meeting adjourned to meet on the call of the chairman, it not being certain when the several parties would be disengaged.

Railroad Earnings.

Earnings of railroad lines for various periods are reported as follows:

Seven months to July 31:		1886.	1885.	Inc. or Dec.	P. c.
Oreg. Short Line.	\$1,141,400	\$932,790	I.	\$188,610	19.8
Net earnings.	341,996	273,358	I.	68,638	25.1
Month of July:					
C. I. St. L. & C.	\$213,631	\$177,087	I.	\$36,544	20.6
Net earnings.	85,484	66,673	I.	18,811	28.0
Lehigh & Hudson.	16,465	14,398	I.	2,067	14.4
N. Y. Sus. & W.	97,841	100,696	D.	2,855	2.8
Net earnings.	56,088	55,425	I.	663	1.2
Oreg. Short Line.	198,132	186,265	I.	11,867	6.4
Net earnings.	87,363	86,811	I.	552	0.6
Southern Pac. Co.:					
Gal. Ha. & S. A.	236,576	231,163	I.	5,413	2.3
Net earnings.	69,459	85,772	D.	16,313	19.0
Gulf. W. T. & P.	3,280	9,093	D.	5,813	63.8
Deficit.	1,026	(net)		4,074	133.7
La. Western.	56,802	42,560	I.	14,242	33.5
Net earnings.	33,079	19,943	I.	13,136	65.8
Morgan's L. & T.	274,113	250,419	I.	23,694	9.5
Net earnings.	30,940	51,082	D.	20,142	65.1
N. Y. T. & M.	13,410	24,000	D.	10,590	44.1
Net earnings.	1,705	8,100	D.	6,395	78.9
Texas & N. O.	97,434	83,434	I.	14,000	16.8
Net earnings.	40,703	37,151	I.	3,552	9.6
Atlantic System	681,615	640,069	I.	40,946	6.4
Net earnings.	204,860	205,096	D.	236	0.1
Month of August:					
California South.	\$71,440	\$12,630	I.	\$58,810	82.3
Cin. J. & Mack.	19,770	17,190	I.	2,580	12.7
Lehigh & Hudson.	20,383	19,038	I.	1,345	6.5
L. N. O. & Tex.	109,180	182,115	I.	72,935	66.8
Nash. C. & St. L.	224,487	75,221	I.	149,266	66.5
Net earnings.	99,697	101,352	D.	1,655	1.6
N. Y. Sus. & W.	94,846	3,856,316	I.	626,470	16.0
Pennsylvania.	4,585,391	1,049,013	I.	2,536,378	55.3
Net earnings.	1,915,046	501,890	I.	1,413,156	71.5
Texas & Pacific.	430,020	501,890	I.	71,870	16.5
First week in September:					
Cin. N. O. & T. P.	\$54,835	\$55,917	D.	\$1,082	1.9
Ala. G. & S. P.	22,182	19,813	I.	2,369	12.0
N. O. & N. E.	7,588	6,038	I.	1,550	25.7
Vicks. & Mer.	8,172	7,902	I.	270	3.4
Vick. S. & P.	8,073	7,628	I.	445	5.9
Cin. W. & Balt.	48,085	35,342	I.	12,743	26.5
Clev. A. & C.	15,307	12,895	I.	2,412	19.4
Col. & Cin. Mid.	9,441	6,407	I.	3,034	47.4
Des. M. & Ft. D.	9,234	8,744	I.	490	5.5
E. Ten. Va. & G.	86,969	80,451	I.	6,518	8.1
Ev. & Ferre H.	16,022	17,659	I.	1,637	9.3
Grand Trunk.	367,005	312,243	I.	54,762	17.5
K. C. Ft. S. & G.	49,328	43,699	I.	5,629	12.9
K. C. Spr. & M.	34,098	23,292	I.	10,806	46.3
K. C. Clint. & S.	4,166	20,000	I.	15,834	381.1
Lake Erie & W.	30,006	29,000	I.	1,006	3.1
Lon. Ex. & St. L.	23,374	17,203	I.	6,171	36.0
Min. & N. W.	14,790	...	...	...	...
St. L. A. & T. H.	26,785	30,672	D.	3,887	12.7
Belleville Line.	16,120	14,641	I.	1,479	10.0
St. L. Ark. & T.	36,682	35,328	I.	1,354	3.8
Second week in September:					
Buff. Roch. & P.	\$57,700	\$54,000	I.	\$3,700	6.8
Buff. Roch. & P.	29,177	31,134	D.	1,957	6.8
Cairo, V. & C.	13,047	9,681	I.	3,366	31.4
Canadian Pac.	219,000	181,000	I.	38,000	21.0
Central Iowa.	35,133	35,960	D.	827	2.4
Chi. & Alton.	212,090	206,547	I.	5,543	2.7
Chicago & Atl.	42,087	28,348	I.	13,739	48.5
Chi. & East. Ill.	36,857	39,938	D.	3,081	7.7
Chi. & N. W.	582,900	507,000	I.	75,900	15.0
Chi. Mil. & St. P.	570,000	482,188	I.	87,812	18.0
C. St. P. M. & O.	125,700	122,500	I.	3,200	2.6
C. I. St. L. & C.	55,312	50,800	I.	4,512	8.9
Denver & R. G.	148,715	132,694	I.	16,021	12.6
Det. Lan. & No.	22,544	25,414	D.	2,870	11.3
Flint & P. M.	37,793	34,974	I.	2,819	8.1
Illinois Central:					
Ill. & S. Div.	237,200	236,988	I.	212	0.9
Iowa lines.	44,900	35,991	I.	8,909	24.7
Ind. B. & W.	39,732	35,525	I.	4,207	10.6
Long Island.	90,300	80,072	I.	10,228	12.8
Louisv. & Nash.	300,345	260,345	I.	40,000	15.5
Marq. H. & Ont.	32,612	27,270	I.	5,342	19.6
Mexican Central.	76,080	61,000	I.	15,080	24.7
Mil. & Northern.	12,841	10,413	I.	2,428	23.5
Mil. L. S. & W.	48,990	32,535	I.	16,455	56.0
N. Y. Out. & W.	28,613	28,541	I.	72	0.3
Norfolk & West.	147,481	110,282	I.	37,199	29.0
Northern Pacific.	330,899	272,382	I.	58,517	17.8
Ohio & Miss.	106,066	100,809	I.	5,257	5.2
Oreg. R. & N.	106,107	121,855	I.	15,748	12.9
Peoria, Dec. & E.	21,590	19,039	I.	2,550	13.5
St. Jo. & G. I.	23,027	24,763	D.	1,736	6.6
St. L. & San F.	112,400	82,800	I.	29,600	35.8
St. P. & Duluth.	49,017	39,825	I.	9,192	23.1
Tabash.	271,706	248,736	I.	22,970	9.3
Wisconsin Cent.	27,364	22,914	I.	4,450	19.4

Weekly earnings are usually estimated in part, and are subject to correction by later statements. The same remark applies to early statements of monthly earnings.

Western Traffic Association.

The new contract periods that the percentages not fixed by its terms shall be determined as follows:

"An effort shall be made by the parties in interest to agree; and, in the event of their failure to do so on or before Sept. 30, the Commissioner shall fix percentages. In case the award of the Commissioner is unsatisfactory to any of the lines he shall be notified within ten days of his award, whereupon the question shall be referred to the Executive Committee at its first meeting, and, if not then satisfactorily adjusted, shall be submitted to arbitration, the dissatisfied party or parties to elect one arbitrator, the Commissioner a

second one, and in case the two cannot agree they shall select a third one.
On or before May 1 of each year any line may call for a change in percentages, to be agreed upon or arbitrated as provided for above.
The executive officers who voted for the agreement made it condition on ratification by their several boards of directors.

Central Traffic Association.

Commissioner George R. Blanchard has issued a call for a general meeting at the committee rooms, Chicago, Wednesday, Sept. 29. The following subjects will be considered:

- First—The unfinished business of the New York meeting.
- Second—The report of the Committee on Freight percentages.
- Third—To receive the report of the Committee on New Contract Points.
- Fourth—A re-division of the expenses called for by various companies.
- Fifth—The progress of the passenger pools.
- Sixth—The situation as to freight and passenger rates.
- Seventh—The enforcement of actual weights on live stock.
- Eighth—To receive the report of the committee appointed to report upon a division of the duties between Commissioner Pink's office and this office.
- Ninth—To receive the report of the committee on the subject of a revision of the contract for the organization of the Association.
- Tenth—To approve the proceedings of the Executive Committee.
- Eleventh—Any question pertinent to the business and purposes of the Association which may be presented by its members.

Assistant Commissioner Geo. H. Daniels calls a meeting of the Passenger Department the day before by the following circular:

Your attention is respectfully called to the following which was unanimously adopted at the last meeting of this Committee, viz.:

"Whereas, The Commissioner has called a meeting of Managing Officers of the Central Traffic Association at Chicago, on Wednesday, Sept. 29, 1886.

"Resolved, That the Passenger Committee, when it does adjourn, do so to convene at the same place, on the same date, Wednesday, Sept. 29, 1886, for the purpose of perfecting the contract for division of earnings; the first work to be taken up being east-bound business, destination New York and Boston; after that, any business which may be properly brought before the meeting."

It being deemed advisable to hold a meeting one day previous to the managers' meeting, a special meeting of this Committee is hereby called in accordance with Rule 2, for Tuesday, the 28th inst., at 10 o'clock a. m., for the consideration of the following questions:

1. To decide what additional pools, as provided for under the general managers' agreement, shall be perfected, and the statistics to be called for as a basis upon which to argue percentages for the division of the business covered by such pools.
2. The putting in proper form, to present to the managers, of such questions as it may be deemed desirable to refer to them at their meeting on Wednesday.
3. The consideration of such other matters as may be deemed important to consider previous to the regular meeting, which is to take place at 10 o'clock Wednesday morning, Sept. 29.

In view of the importance of these subjects, and the desirability of perfecting the various pools at the earliest possible moment, every member is urgently requested to be present on Tuesday morning prepared to remain through Tuesday, Wednesday, Thursday and Friday, if necessary, in order to complete the business brought before the meeting.

You are aware that on the 30th inst. the Passenger Committee is to continue the arbitration of the differential rate questions before Arbitrator Wilson, in accordance with his adjournment.

Will you not, therefore, kindly be present at 10 a. m. Tuesday, Sept. 28, at Association rooms, Chicago, prepared to take up the business above referred to.

Chicago Shipments East.

The report to the Board of Trade by the seven pool lines, which includes shipments to local as well as through points, gives the following shipments for the week to Sept. 18, in tons:

C. & G.	M. C.	Lake Shore.	Nickel-Plate.	Fort Wayne.	C. & St. L.	P. B. & O.
4,501	10,058	6,041	5,195	6,472	7,423	2,178

This is a total of 42,468 tons, against 38,490 the week before.

An Association of Pool Managers.

Mr. Geo. R. Blanchard, Commissioner of the Central Traffic Association, proposes an association of the managers of similar associations, of which there are now ten, with offices in Chicago. These different associations necessarily have many relations with each other, and there always is much negotiating between the members of one with the members of those adjacent, which usually can be done best by the Commissioner, as the representative of all the interests concerned.

Central Iowa Association.

Commissioner Geo. L. Carman reports the earnings from the traffic in June to have been \$40,892 from west-bound and \$2,874 from east-bound business. Of the total 35.9 per cent, was earned on the Rock Island, 17.2 on the Wabash, 16.5 on the Chicago, Burlington & Quincy, 16.3 on the Milwaukee & St. Paul, and 16.1 on the Chicago & Northwestern. The latter made 49 per cent. of the east-bound earnings, but only 14.5 per cent. of the west-bound.

Indianapolis Car Movement.

The number of cars received and forwarded at Indianapolis has been:

	Aug. 23.	Aug. 28.	Sept. 4.	Sept. 11.	Sept. 18.
1886—Total.....	19,633	20,521	21,103	21,113	26,892
Loaded.....	15,329	16,057	16,390	17,123	22,546
1885—Total.....	23,353	19,730	20,462	.....	.....
Loaded.....	14,613	15,966	15,567	.....	.....

The exceptionally large movement last week was due to a large coal movement. The tonnage westward and the local traffic generally is unusually heavy.

Traffic Notes.

The Chicago & Ohio River pool has declined to make certain special rates on pig iron going north requested by their southern connections; but cotton domestics were made third-class, and cotton waste fifth-class in car loads and fourth in less than car loads.

It is reported that the Pacific Mail Co. has contracted to take harley from San Francisco to Chicago, charging 35 cents per 100 lbs. from San Francisco to New York, and contracting for forwarding it by canal and lake to Chicago for 13 cents.

The earnings in the Colorado & Utah Association last August were \$76,908 from west-bound and \$23,877 from east-bound freight.

Passenger rates from New York to all Southern and South-

western points were reduced Sept. 20 by all the lines which had been maintaining rates, by circular issued by Assistant Commissioner Pierson. To New Orleans the reduction is from \$32 to \$25; to Atlanta from \$24 to \$20.

Mr. E. A. Ford, of the Pennsylvania Co., in accordance with a vote of the lines interested, has called a meeting at the Palace Hotel, San Francisco, Oct. 12, to adopt if possible "a more comprehensive and satisfactory plan than that now in vogue for the conduct of east-bound through passenger traffic from the Pacific Coast."

The Wisconsin railroads generally are preparing to make their local passenger rates not more than three cents per mile.

Anthracite Coal Tonnage.

The shipments of anthracite coal for August and the eight months to Aug. 31 are reported by the Official Accountant Mr. John H. Jones, as follows, the statement including the entire production, excepting that consumed by employees and for steam and heating purposes about the mines:

	August.	1885.	1886.	1885.	1886.
Phila. & Reading.....	981,071	1,181,775	7,026,042	6,967,229	.....
Lehigh Valley.....	511,050	548,039	3,760,849	3,466,077	.....
Del. & West.....	425,101	321,488	3,162,889	2,904,476	.....
Del. & Hud. Canal Co.....	266,160	262,301	2,201,413	1,851,454	.....
Pennsylvania Railroad.....	301,093	298,507	2,199,590	2,110,096	.....
Pennsylvania Coal Co.....	136,426	146,028	818,814	850,094	.....
N. Y., L. E. & W.....	60,490	65,772	408,520	375,013	.....

Total..... 2,682,002 3,023,910 19,638,733 18,526,239

The stock of coal on hand at tidewater shipping points, Aug. 31, 1886, was 649,059 tons; on July 31, 1886, 705,480 tons; decrease, 56,221 tons.

The decrease in production in August compared with last year was 341,908 tons, or 11.3 per cent.; for the eight months there was an increase of 1,112,487 tons, or 6 per cent. The Delaware & Hudson gained 19 per cent., the Lackawanna 8.9, and the Lehigh Valley 8½ per cent.

OLD AND NEW ROADS.

Atchison, Topeka & Santa Fe.—It is reported that 1,000 teams are at work on the line across Indian Territory, between Arkansas City and the Canadian River, and piles are being driven for the bridge across the Arkansas at Arkansas City. It is hoped to have the track laid to the Cimarron River, about 75 miles, by November.

Atlanta, Augusta & Hawkinsville.—The promoters of this enterprise are engaged in obtaining stock subscriptions in the country along the line, about \$20,000 is expected at Thomaston, Ga.

Atlantic & North Carolina.—One of the best harbors on the North Carolina coast is that of Beaufort, N. C., but it is famous for the ravages of the teredo, and woodwork placed in the waters of the harbor has a maximum life of only 3 years. This little worm has given the management of this railroad, whose southern terminus is at Morehead on this harbor, an infinite amount of trouble. No wharf was safe for a longer period than three years, and at the expiration of that time all piling would have to be renewed. The management is now rebuilding the company's wharves at this point with piles created by the Carolina Oil & Cresote Co., of Wilmington, N. C., with 16 lbs. of cresote oil to the cubic foot of timber. It is thought that piling thus treated will indefinitely withstand the attacks of the teredo.

Baltimore & Harrisburg.—The Hanover Junction, Hanover & Gettysburg and the Bachman Valley companies, owning short lines in Pennsylvania, have been consolidated under this name.

Baltimore & Ohio.—The company formally opened its new line from Philadelphia for passenger traffic last Sunday, Sept. 19, with three express trains daily running via Washington, with through cars for Chicago, Cincinnati and St. Louis. At the same time, passengers from New York were ticketed by the Bound Brook route (New Jersey Central and Reading), making the transfer in Philadelphia instead of Baltimore, and depriving the Pennsylvania of any income from the Baltimore & Ohio's business. The rates remain as heretofore since November, \$15 to Chicago (\$5 less than the regular rate by other lines), \$13 to Cincinnati and \$18.50 to St. Louis.

The company is building a wharf at Pier 27, East River, New York, for freight to be received by floats from the Communipaw terminus of the Central of New Jersey.

The offices of the Superintendent of the Philadelphia Division were removed to Philadelphia, No. 2,311 Walnut street, Sept. 17.

Bowie & Spanish Fort.—The people between these places in Texas are holding meetings and endeavoring to secure the construction of a railroad either as a branch of the Atchison, Topeka & Santa Fe or the Ft. Worth & Denver.

Buffalo, Rochester & Pittsburgh.—This company recently finished cutting down the road bed through Titus's Hill, five miles out of Buffalo, where for 2,800 ft. the grade was lowered 12 ft., partly in solid rock. This was completed in two weeks. Three miles of new tracks have lately been laid in the Buffalo yard. The work of improvement now on hand is the filling of two long trestles at Carrollton, 10 miles south of Salamanca, and building a crossing siding three-quarters of a mile long.

Burlington, Cedar Rapids & Northern.—On the Sioux Falls Extension track has been laid from the junction with the Iowa Falls Division, at Ellsworth, westward 10½ miles to Rock Rapids, Lyon Co., Ia., where it will cross the Rock River branch of the St. Paul & Omaha.

Canadian Pacific.—A Chicago paper publishes a report that this company purposes building a railroad from the Detroit River to Chicago, which is entirely improbable.

Cape Girardeau & Southwestern.—Grading is nearly completed on a branch from Brownwood, Mo., to Bollinger Mills, through timber land.

Cherryvale, Paola & Kansas City.—This company has been chartered to build a railroad from Paola, Kan., south by west 96 miles to Cherryvale, where the distance between the Fort Scott & Gulf and the Southern Kansas road is considerable.

Chicago, Burlington & Quincy.—The track has been completed on the line from Aurora, Neb., southwest 30 miles to Hastings, connecting two parallel east-and-west lines.

Chicago, Caldwell & Southern.—This new Kansas company purposes to build a railroad from Wellington, Kan., south to the Indian Territory line near Caldwell, about 18 miles, to be part of the Rock Island's Kansas system. The Atchison Company already has a branch between the two places.

Chicago, Milwaukee & St. Paul.—The extension of the Hastings & Dakota line westward was opened for passenger traffic Sept. 19 from Ipswich to Bowdle, Dak., 30½ miles, with one intermediate station, at Roscoe, halfway between. This completes the line for 56½ miles west of

the James River line at Aberdeen, and 362 miles from its eastern terminus at Hastings.

Chief Engineer D. J. Whittemore has opened bids for an iron bridge over the Missouri River at Kansas City. The estimated cost of the bridge is \$1,200,000. The contract has not yet been awarded.

The report to the Wisconsin Railroad Commissioner for the year ending June 30 makes the following showing:

	1886.	1885.
Average miles worked.....	4,923	4,802
Gross income.....	\$24,584,729	\$23,655,764
Operating expenses.....	14,302,916	13,576,447
Net.....	\$10,281,813	\$10,079,317
Taxes.....	745,474	728,311
Balance.....	\$9,536,339	\$9,351,006
Interest.....	6,139,506	6,006,612
Balance.....	\$3,496,833	\$3,344,394
Dividend.....	2,877,878	2,703,082
Surplus.....	\$618,955	\$551,312

This is valuable chiefly as showing what the working expenses have been since last December. The increase in gross earnings is nearly 4 per cent.; in net earnings, 3 per cent.

The General Manager has issued an order reducing the local passenger fares over all lines in Wisconsin to three cents per mile.

On the Kansas City Extension grading is progressing on the 70 miles from the Iowa line south to Chillicothe, Mo.

Surveyors are locating a new line west of Sabula, Iowa, which it is said will be 20 miles long in place of 27 by the present line.

Chicago & Northwestern.—The extension of the James River Valley Branch of the Dakota Central from Columbia north to Oakes, Dickey County, Dak., where it meets the James River Valley Branch of the Northern Pacific, was opened for traffic Sept. 20, making the branch 135 miles long from Huron north to Oakes, where it will meet the James River Valley line of the Northern Pacific. This will complete a north and south line of railroad all the way from Yankton to Devil's Lake, about 350 miles, worked by three companies. The stations and distances from Columbia on the extension are: Houghton, 11.7 miles; Hecla, 20.45; Ludden, 29.37; Oakes, 38.53.

Cincinnati, Hamilton & Dayton.—At a stockholders' meeting, Sept. 16, it was resolved to issue \$10,000,000 of preferred stock, to take up bonds now bearing 5, 6 and 7 per cent. interest. The stock is to be redeemable in three years at the option of the company, with a guaranteed dividend of 6 per cent., 2 per cent. to be deferred until redeemed; and if not redeemed in ten years, the dividend to be 4 per cent.

Columbus & Mayville.—Freeland & Mackin, of Pittsburgh, have taken the contract to build the extension from Hillsboro to Ripley, O.

Danbury & Norwalk.—The lease of this railroad to the Housatonic was ratified at a meeting of the two companies Sept. 18. The lease takes effect immediately, and as soon as the connection between tracks is completed it is said that the through cars between New York and Pittsfield will run via South Norwalk and the Danbury road.

Delaware, Lackawanna & Western.—It is reported that surveys have been made for a loop line of the Morris & Essex Division from Drakesville, N. J., 44 miles from New York westward, passing by Budd's Lake to Branchville, near the Delaware River. It is said that the line across New Jersey would be shortened 20 miles by this road.

Evansville & Terre Haute.—For this company's fiscal year ending with August, it reports earnings and expenses as follows:

	1885-86.	1884-85.	Increase, P. c.
Gross earnings.....	\$751,457	\$718,823	\$32,634 4.5
Expenses.....	346,879	336,721	10,158 3.0
Net earnings.....	\$404,578	\$382,102	\$22,476 5.9

The figures here given for expenses in 1884-85 are smaller and for net earnings larger than were given in the report for that year. The gross earnings last year were exceeded in 1882 and 1883, but the net earnings were never so large before.

Fort Worth & Denver City.—Tracklaying on the extension from the present northwestern terminus at Harold, Tex., was begun Sept. 17, when nearly two miles was laid. It was expected to reach Vercen, 16 miles, by Oct. 1, and Quanah, 44 miles in a northwesterly direction, about a month later.

Greenville & Laurens.—The completion of this railroad, which extends from Laurens, S. C., northward 38 miles to Greenville, was celebrated at Greenville Sept. 15.

Green Bay, Winona & St. Paul.—The report to the Wisconsin Railroad Commissioner for the year to June 30 last shows:

	Receipts.	Expenses.	Net earn.	Int. and taxes.	Deficit.
1885-86.....	\$314,470	\$275,418	\$39,052	\$101,314	\$62,262

Compared with the previous year there is an increase of \$11,280 in receipts, of \$7,697 in net earnings.

Hammond & Calumet River.—Surveys of several lines, apparently for this company, have been made across the wilderness of railroad tracks south of Chicago.

Hanover Branch.—Sept. 1, the President of this little Massachusetts road discharged a brakeman, giving him good recommendations, but offering no reason for his discharge. Some time later the executive boards of the Knights of Labor, at Hanover and Rockland, asked for the re-instatement of the man, or a statement of reasons for his discharge, both of which requests were refused. A strike was expected.

Houston & Texas Central.—At a meeting of a committee of the "general" mortgage bondholders, Sept. 17, it was resolved to push the foreclosure proceedings under that mortgage with all possible speed, so that a bill of sale can be had at as early a day as possible. General mortgage bondholders will be asked soon to give their names and addresses, with the amount of bonds they hold, to the Farmers' Loan and Trust Company, trustees of the mortgage. This is the third lien on the property, the consolidated mortgage (8s) as well as the first preceding it.

Hudson Bay.—The President, H. Sutherland, M. P., telegraphs to Winnipeg from London that means have been obtained for beginning work on this road.

Indianapolis, Decatur & Springfield.—It having been widely reported that Mr. C. P. Huntington was about to purchase a controlling interest in this road, Mr. H. B. Hammond, the President and Receiver, says there is no ground for the report.

Kansas City & Gulf.—Natchez, Miss., by 1,167 to 2 has voted in favor of subscribing \$320,000 to the capital stock of a company that purposes to build a railroad from Kansas City to the Gulf of Mexico, crossing the Mississippi at Natchez.

Kansas & Colorado.—The track has been laid 40 miles west by north from Salina, Kan. (the terminus of the Topeka, Salina & Western line of the Missouri Pacific), to Fowler's, and is worked at present by McCracken Bros., the contractors. The line divides the territory between the Kansas Pacific and its Central Branch.

Litchfield, Carrollton & Western.—Tracklaying was begun by Collins & Larkworthy, the contractors, Sept. 17, with the intention of completing the 12 miles between Barnett and Carlinville, Ill., by Oct. 15. The work is very heavy, and 500 men and 300 teams are employed on it.

Louisville, New Orleans & Texas.—It is reported at Vicksburg that next year this company will build a loop line from Clarkdale, 77 miles south of Memphis, down Cassaday's Bayou and the west bank of the Yazoo to Yazoo City and thence down the east bank to Vicksburg, about 170 miles. A large part of such a line would be close to the Illinois Central's branch.

Manitoba & Northwestern.—This railroad, heretofore extending from Portage la Prairie, on the Canadian Pacific 56 miles west of Winnipeg, northwest 78½ miles to Minnedosa, has been extended 31 miles further northwest this year.

Paris, Marshall & Northwestern.—The gauge of the old road has been changed from 8 ft. to the standard for the 19 miles west by north from Marshall, Tex. Thence to Gilmer, on the St. Louis, Arkansas & Texas, about 22 miles, the work is well advanced, and a large force is employed. The contract for the grading from Gilmer northwest 31 miles towards Paris has been let to James West, of Paris, Tex. Six new engines are contracted for, and it is hoped to have the track laid on the Paris end before the end of the year.

Mexico.—The Mexican Financier of Sept. 4, says: "A branch line on the Northern Division of the National has been built by Mr. Jose Gonzales. The line starts from Tultenango and terminates at the hacienda of Al Mayorazgo, 15 kilometres (9 miles) distant. Eventually, it is proposed to extend the branch to the El Oro mines owned by an American corporation. This line has been constructed to bring in wood more cheaply than was possible formerly. Mr. James Butler was the engineer in charge of the work and the contractor was Mr. Stevens, well known in connection with the National as a large road and bridge contractor."

Milwaukee, Lake Shore & Western.—Where the iron mines are situated, which are giving this road its great ore traffic this year, 18 months ago there was an unbroken forest. Now, within a radius of 10 miles, there is a population of 15,000 to 18,000 and three important towns, Hurley, Bessemer and Ironwood. The Colby mine turns out nearly 2,000 tons per day—a mere hill of ore, which is shoveled directly into the cars—at a cost, it is said, of less than 10 cents per ton. The Aurora is another surface mine, but most of the mines are deep and the ore must be raised 50 to 250 ft. The first shipment was made from the Colby mine Aug. 1, 1885, and this year it has turned out nearly 300,000 tons.

The Penokee Railroad, which the Wisconsin Central people are preparing to build, will reach these mines, and as the owners of the railroad control the most important of the mines, it will be likely to carry a very large part of the ore, but the Wisconsin Central will only get a short haul on it.

Minneapolis & St. Louis.—The Cannon Valley Branch is to be extended this season from Eagle Lake westward to Mankato, Minn., about five miles.

Montana Central.—At the Hill banquet in Helena Sept. 10, Col. J. T. Dodge, the Chief Engineer of this road, said: "The route of the Montana Central is the best and most feasible that can ever be built from Helena eastward. Its maximum grade going east is between here and Silver Creek summit, and is only 58 ft. per mile. No other grade on the Montana Central or the Montana Northern will exceed 45 ft. per mile. Beyond the Marias the grades will be much more favorable still. Its highest summit east of here is 1,243 ft. below Bozeman Summit, an altitude which is considered by competent engineers to be equivalent to over nine miles in distance."

"Although occupying some of the most crooked canyons in Montana, its sharpest curves are two degrees less than that at the east end of the Bismarck bridge, and many others on important lines. To accomplish this it is building five tunnels through projecting bluffs, as driving the Missouri out of the bed which it pre-empted ages ago."

"With these advantages, which are secured by the most liberal use of money, a route will be opened from here to St. Paul and to Lake Superior, by which freight can be transported at rates which will be very unwelcome to our competitors, and very profitable to the people of this territory."

Nashville, Chattanooga & St. Louis.—For August and the two months of its fiscal year ending Aug. 31, this company reports:

	1886.	1885.	Two months.	1885.
Gross earn.....	\$224,487	\$182,115	\$439,743	\$347,782
Expenses.....	124,780	105,894	247,360	204,440
Net earn.....	\$99,697	\$75,221	\$192,383	\$143,342
Int. and taxes.....	58,558	56,272	116,700	112,172
Improvements.....	6,145	3,441	13,966	8,532
Surplus.....	\$34,994	\$15,508	\$61,627	\$22,638

The increase in gross earnings in August was 23½ per cent.; in net, 32½. For the two months the increase in net earnings is 34 per cent.

The directors have declared a dividend of 1 per cent. payable Oct. 10, based on the earnings of the three months ending with September. This is the first dividend since April, 1884, when 2 per cent. was paid; 2 per cent. was paid in 1883 also, 1½ in 1882, 3 in 1881, 2 in 1880, and 2½ in 1879.

Natchez, Jackson & Columbus.—An extension from Jackson northeast to Columbus, Miss., is in view, and the gauge is to be changed from 3½ ft. to the standard.

New Haven & Northampton.—This company offers a reward of \$500 for the arrest or evidence leading to the conviction of the person who misplaced the switch at Holyoke, Mass., Sept. 12, which caused the death of Engineer Baldwin.

New York, Chicago & St. Louis.—Arguments in the suit at Cleveland for foreclosure of the second mortgage were closed last Tuesday. The counsel have 20 days to prepare briefs setting forth the authorities chiefly trusted in support of their positions.

New York, Pennsylvania & Ohio.—Sept. 16, at Youngstown, O., 60 yard brakemen and conductors struck for an advance of 10 cents each per day, raising the wages of conductors \$2.60, and brakemen \$1.95, which is the price paid in the Cleveland yard. The strikers also demanded a third man for crews. This man was taken off nearly two years ago and promised to be returned when business was good. Superintendent O'Brien at Cleveland telegraphed that the advance would be granted, but said nothing about third man. The strikers refused to return to work without the man, but there is no further news of trouble.

North Grafton & Northboro.—Surveys were completed last week for a railroad from the Boston & Albany at North Grafton, Mass., northwestward about eight miles to Northboro, and there is talk of extending it some six miles further to Marlboro and Hudson. Mr. John Gilman is active in promoting the scheme.

Ohio & Mississippi.—Not long since the Attorney-General of Illinois began proceedings for mandamus to compel this company to put the track of the Springfield Division of its road in a safe condition, and to afford its patrons reasonable facilities. It was insisted that it was the duty of the company as a common carrier to do this, especially as certain counties, towns and townships along its line had contributed to the construction. Sept. 21 the company filed its answer to the bill, declaring that it acknowledges no such obligation, and is anxious to cut off the division of the road in question from its system. It admits that it is in possession of the branch road, but declares that it is so by fraud and denies any obligation to keep it in order or operate it; that the division has never made expenses, and that interest has not been paid on its mortgage bonds since January, 1875. The answer admits that the road is not in a condition to permit the running of trains at high speed, and concludes by offering to surrender the road to a receiver to be appointed by the Court.

Ohio River.—Work on the extension from Parkersburg, W. Va., to Point Pleasant is progressing rapidly, a steam shovel able to load 100 cars per day working at Point Pleasant in charge of Andrew Coleman, of Marietta, O., and a steam ballast unloader standing ready for the ballast train. Two new locomotives have been received and are at work on the extension. The company is building a round-house at Point Pleasant and the track is laid to Clinton, 12 miles above that place.

Ordway, Bismarck & Northwestern.—A grading party is to begin work at Bismarck, Dak., on this road directly.

Oregonian.—This Scotch company in 1881 leased its road, consisting of 150 miles of 3 ft.-gauge railroad on both sides of the Willamette River, in Oregon, to the Oregon Railway & Navigation Co. for \$28,600 per year. The new management of the Navigation Co. after Mr. Villard's resignation declared this lease invalid, and no rent has been paid since November, 1883. The Oregon courts have now decided that the rent must be paid, amounting now to \$71,500, though the telegraph reports it and the costs to be \$200,000 to \$250,000. It hardly earned its expenses by the last reports, and its lines would be more useful to the Oregon & California than to the Navigation Co., which at the time of the lease controlled the Oregon & California also.

Paris & Great Northern.—The first locomotive on this road began running with a construction train Sept. 16, at Paris, Tex., where a little track is laid.

Pennsylvania.—To straighten its tracks at Harrisburg, this company prepared to use the bed of the Pennsylvania Canal, and to move the canal some hundred feet to the east, over some land which the Philadelphia & Reading bought in order to connect with the South Pennsylvania. The Reading applied for an injunction, which was refused by Judge Swinton, at Harrisburg, Sept. 21, on the ground that no damage was done it, and that the public's benefit from the change would be material. The case will be appealed to the Supreme Court.

The shops are turning out new freight cars as rapidly as possible, at the rate of about 60 per day. It is expected that the new Schuylkill Valley line will require a great many.

Peoria, Decatur & Evansville.—A meeting of stockholders will be held Nov. 1 to vote on a resolution of the directors to convert the present 6 per cent. non-cumulative income bonds (\$2,088,000) into 5 per cent. second-mortgage bonds. No interest has ever been paid on these bonds, and last year the available surplus was but \$34,235, which is but 1½ per cent. on the incomes. Equipment certificates absorbed \$48,000, and this was properly a payment on capital account, but there are \$229,000 of these certificates still outstanding, \$48,000 of which are due yearly.

Philadelphia & Northwestern.—This company, which purposes to build an elevated railroad seven miles long in Philadelphia, in applying for permission to build its structure in Front street and others, acknowledged that it would be responsible for all injury to property, agreed to carry passengers for a fare of five cents between 5 and 8 in the morning and 5 and 7 in the evening, to pay 5 per cent. of its gross earnings into the city treasury, and submit all its plans and specifications to the approval of the Chief Engineer and Surveyor of the city.

Philadelphia & Reading.—President Gowen and his adherents have at last made an agreement with the Drexel-Morgan syndicate, by which all serious opposition to a reorganization of the company by that syndicate, to which certain representatives of the Gowen interests are added, is withdrawn. The basis of the settlement as given in a letter from Messrs. Alfred Sully and Edward Lauterbach to Mr. Gowen, endorsed by Mr. J. Pierpont Morgan, is as follows:

"First—The present syndicate to be enlarged by \$4,000,000 additional subscriptions, to be placed by Messrs. Sully and Lauterbach, the names and amounts of each subscription to be approved by Mr. J. P. Morgan and Mr. Jesse Seligman, the latter of whom is to take the place of Mr. Austin Corbin as representative of the new subscribers in the management of the syndicate. The compensation of the syndicate to be increased proportionately to the increase of subscriptions."

"Second—The Reconstruction Trustees to be increased to 13 members by the addition of Messrs. Alfred Sully, R. K. Dow, John Wanamaker and Charles L. Borie, and to make such changes in the plan of reorganization as the said trustees may think fit, provided that the following changes shall be made:

"A—The plan to provide for reorganization without foreclosure by dealing with every obligation and security of the company."

"B—Mortgage to be given to secure the bonds to be issued in lieu of preferred stock in the present plan, and subsequent mortgages to be given to secure the bonds issued for present junior mortgage bonds. The bonds issued in lieu of preferred stock in the present plan to have the right to vote, if such right can be legally given without affecting the charter of the company."

"C—The Executive Committee of the reconstruction trustees to be increased to six by the addition of Mr. Alfred Sully."

"D—After changes in the plan have been made, at least 60 days to be given to security-holders to accept its provisions, and no foreclosure shall take place provided security-holders sufficient in amount to satisfy the reconstruction trustees accept the provisions of the plan within the prescribed time. If no such acceptance is secured, then reorganizations take place by foreclosure and only for the benefit of those who have accepted, and the plan under foreclosure may be prepared by the reconstruction trustees as an alternative plan and issued at the same time as the other for the information of the security-holders."

"E—The voting trust to be for five years and to consist of five persons, of whom four shall be J. Pierpont Morgan, J. Lowber Welsh, Henry Lewis and John Wanamaker, which four shall select a fifth, who shall be satisfactory both to the syndicate and to the reconstruction trustees."

"Third—Any changes in the plan other than those hereinabove provided for shall be subject to the approval of the syndicate."

"Fourth—A united effort to be made by the company, the reconstruction trustees and the syndicate to secure the immediate appointment of Mr. Austin Corbin as an additional Receiver, and if Mr. Corbin will take the position and legally qualify himself to fill it, it is understood that the presidency of the company shall be offered to him."

"It is, of course, understood that the words 'Syndicate' and 'Reorganization Trustees' herein used, when referring to any future action to be taken by either, apply to the enlarged syndicate and enlarged board of Reorganization Trustees."

Mr. Gowen forwarded his resignation, to take effect on the acceptance of this plan, and especially approved the choice of Mr. Corbin as President, and he was elected last Tuesday.

There is great interest as to the probable position of the reorganized company.

Mr. Gowen said: "I have no fear now that anything will be done tending to further the policy or advance the interests of the Pennsylvania Railroad as opposed to the Reading."

A Pennsylvania Railroad official said: "Our road has not now nor at any time any other interest in the construction of the new company than that of maintaining proper harmonious relations, and the introduction even of Mr. Gowen's friends to the Board of Trustees does not affect the prospective standing of the two companies. Mr. Gowen and his obstruction measures are disposed of and a few practical business men are brought together who will operate the properties under their control for the interests of its owners, without reference to the personal feelings of Mr. Gowen."

Dr. Hostetter, a director and the head of the opposition to the sale of the South Pennsylvania to the Pennsylvania, said: "Corbin's policy will be to prevent disastrous warfare between the Reading and the Pennsylvania road or other companies. He will continue the freight arrangements with the Baltimore & Ohio, by which that company will use the line and terminal facilities of the Jersey Central. Nothing now stands in the way of the completion of the South Pennsylvania road, except the decision of the Supreme Court, and should that favor us, as we expect, then you may look for active operations to begin soon on the road."

Pittsburgh, Painesville & Fairport.—The standard gauging of this road, whose name is that of the corporation reorganized after foreclosure of the Painesville & Youngstown first mortgage, has been completed. The road has been leased to the Pittsburgh & Western, and will, we are told, be operated on and after Oct. 1 in connection with the lessee as a through line from Pittsburgh to Lake Erie.

Port Jervis & Monticello.—On motion of counsel for the Receiver in the Supreme Court at Newburg, N. Y., Sept. 18, in the case of Jacob Eidel against this company, Judge Brown directed the road to be sold at Port Jervis, N. Y., Nov. 6 next. The road is 23½ miles long, from Port Jervis northward to Monticello. It was sold under foreclosure of mortgage in 1875 and reorganized with only \$50,000 of funded debt, but it has not always been able to earn its working expenses.

St. Joseph & Grand Island.—The contract for the branch from Fairfield northeastward to Sutton, Neb., 20 miles, has been let to Miller & Loomis, of Chicago.

St. Louis, Arkansas & Texas.—The company has filed an amendment to its charter in Texas providing for a branch from Mt. Pleasant, Titus County, west by north to Sherman, about 110 miles. Such a branch would divide the territory between the main line and the Transcontinental Division of the Texas Pacific.

W. T. Smith, the engineer in charge of surveys between Sherman and Whitehouse, Tex., began location at Sherman Sept. 17, and grading was to begin about a week later.

St. Louis & Cairo.—The gauge is to be changed from 3 ft. to the standard next Sunday, Sept. 26, from East St. Louis to Murphysboro, 90 miles; and the remainder to Cairo, 56 miles, probably two weeks later. New rolling stock has been provided, and through passenger trains between St. Louis and Mobile will begin running probably about the last week in October.

St. Louis & Chicago.—Week before last this company obtained in the Illinois Circuit Court at Springfield a temporary injunction against B. F. Johnson & Co. from interfering with the running of its trains. On the hearing of the motion to dissolve the injunction, Sept. 14, it appeared that the company's line runs from Litchfield to Springfield, Ill.; is completed about 30 miles, and the remaining 15 miles is partly constructed; that the sub-contractors are in possession and proceeding under their contracts; that the company made ready to commence the operation of the line, but was prevented. The injunction was dissolved on the ground that the sub-contractors were entitled to the exclusive possession of the road until it is completed and paid for. The sub-contractors then obtained a temporary injunction preventing the company from becoming common carriers, operating the road, or interfering with them in any way.

St. Louis, Ft. Scott & Wichita.—The Newton Branch has been extended from Newton northwest to Elyria, with stations at Newton, Hesston, Mound Ridge and Elyria, Kan.

St. Paul, Minneapolis & Manitoba.—On the Devil's Lake Extension the track is now down for 110 miles from Devil's Lake, and within 12 miles of the second crossing of Mouse River, which is to be the terminus this year, and where a bridge 1,000 ft. long is required. Twenty miles further on is the Berthold Indian reservation, permission to cross which has yet to be obtained, but the grading is to be done for 60 miles west of the reservation, to the Montana line, this year. At Rugby Junction, 60 miles west of Devil's Lake, a branch north to the Manitoba line is being graded and to have 40 miles of track laid this year.

The Devil's Lake Extension has been opened for traffic to Towner, Dak., 76 miles west of Devil's Lake, and 492 miles from St. Paul.

The annual report for the fiscal year to June 30 makes the following showing:

	1886.	1885.	Inc. or Dec.	P. c.
Gross earn., passenger.....	\$1,473,412	\$1,395,797	I. \$77,615	5.6
" freight.....	5,87,284	6,013,059	D. 425,766	7.4
Other sources.....	251,039	368,317	D. 117,278	31.8
Total.....	\$7,321,736	\$7,776,164	D. \$454,428	5.8
Expenses.....	3,658,494	3,515,719	I. 142,685	10.3
Net earnings.....	\$3,663,332	\$4,460,445	D. \$797,113	17.9

Notwithstanding the large decrease in net earnings, the surplus over fixed charges was \$1,668,512, which is \$8.31 per share of stock, while only 6 per cent was paid.

St. Louis & San Francisco.—The entire line from Fort Smith, Ark., across the Indian Territory, to the Red River, has been located, and the contract for grading 47

...the north end of the Red River has been let to the Frun-Banbrick Construction Co., of St. Louis, of which Capt. C. Bostick, of Van Buren, Ark., is Superintendent. The trestles and pile work for 100 miles have been let to H. Grimes, formerly Superintendent of the Union Bridge Co., of St. Louis, and another contract has been let to McLeod & Sparks, of Ft. Smith.

San Antonio & Aransas Pass.—A mortgage for \$10,000,000 to the Farmers' Loan and Trust Co., of New York, was filed in San Antonio, Tex., Sept. 18, covering the proposed main line from San Antonio southeastward to the Gulf at Aransas Pass, which is partly constructed, and the proposed Corpus Christi and Northwestern branches.

Savannah, Dublin & Western.—On this road, now in receiver's hands, about 30 miles are reported graded between Dublin and Savannah, and about 35 miles west of Dublin, to within 14 miles of Macon.

Sinnemahoning Valley.—The main line now extends from the Buffalo, New York & Philadelphia, at Keating Summit, Pa., to Costello, 13 miles, and five branches, measuring in the aggregate six miles, have been built this year, chiefly for hauling hemlock logs and lumber. Four locomotives and 80 cars are employed. The chief proprietor is Frank H. Goodyear.

South Carolina.—The President and Engineer have carefully examined into the damage done the structures of the company by the Charleston earthquake, and report that it will amount at the utmost to not more than \$10,000 to \$15,000, instead of \$100,000, as had been reported.

South Pennsylvania.—The decision in the Pennsylvania Supreme Court on the appeal from the injunction to prevent the purchase of the majority of the stock of the Pennsylvania Railroad Co. is expected on the first Monday of October. If the injunction is sustained, it is reported that the Vanderbilt stock will be sold to the Pittsburgh stockholders, and that the company, under the Presidency of Dr. Hostetter, will complete the road. Dr. Hostetter has recently purchased about 5,000 acres in the Connellsville coke belt, through which this road would run, said to be nearly all already secured in the interest of the Pennsylvania Railroad. It is also said that even if the decision permits the Pennsylvania to secure the South Pennsylvania a new railroad will be built on the same general line, and be worked in connection with the Reading.

Southern Pacific.—A telegram from Houston, Tex., dated Sept. 15, says: "Another strike is imminent on the Louisiana Division of the Southern Pacific road. It seems J. C. Buchanan, Division Superintendent, has become obnoxious to the trainmen, and the Brotherhood of Engineers, firemen and brakemen have asked that he be discharged. A. Hutchinson, General Manager, being absent in England, his assistant, Mr. Kruttschnitt, refused to act in the premises. Unless the matter is settled in a few days an extensive strike is bound to ensue." There has been no later report on this subject.

Texas & Pacific.—The Central Trust Co. is now prepared to issue trust certificates, printed from steel engraved plates, engraved by the Homer Lee Bank Note Co., against the deposit of income and land grant mortgage bonds.

The Silver Creek Collision.—Engineer Brewer, of the excursion train wrecked in this collision, in reply to a request to make a statement of his case for publication, is reported to have said:

"I have promised the Coroner to be present at the inquest Wednesday morning, and I will leave for Dunkirk on the morning accommodation train. I have been an engineer for 18 years, and had never been in a wreck of any kind until the one of the 14th. I met the flagman at the summit and slowed up for him. He got on and told me that train 41 was broken down in the hole just east of Irving. I was told by him that the train would wait at Irving siding for me, so that when I left Silver Creek I expected to have a clear track to that point. I received the signal from Conductor Harrison, and started. When I got into the cut, I saw the way-freight train coming toward me very fast. I applied the air-brake and reversed the lever and got to the platform to jump, but did not have a chance to do so before the two engines came together, throwing me to the ground. If I had not been thrown, I would have been crushed between the tank and caboose. I was hurt badly, and after waiting around the wreck for about 25 minutes, I went to friends of mine, with whom I remained a day or two, coming to Buffalo last week, and have been staying here ever since. I might have gone to Dunkirk before, but I have not been able to get out so as to go to the train until today.

"When I read the garbled reports in the papers of Erie, Pa., and that I was liable to be lynched if I went to Erie, I was afraid to go to my family. If I wanted to run away you do not suppose I would come to Buffalo, do you? It would seem as though I am making an effort to clear myself, and for that reason I do not care to say anything further until I go before the Coroner." The next day the majority of the coroner's jury found the accident due to the conductor and engineer of the excursion train, and they were arrested and put in jail charged with manslaughter.

Toledo, St. Louis & Kansas City.—Arguments began last week in the United States Circuit Court at Toledo in the case of the Central Trust Co., of New York, against Sylvester Kneeland, involving the terminal property in Toledo, valued at \$300,000.

Union Pacific.—The land sales are very much less than last year, when unusual quantities of grazing lands were sold. For August and the eight months to Aug. 31 they have been:

	Acres.		Proceeds.	
	1886.	1885.	1886.	1885.
August	22,363	138,097	\$105,637	\$360,182
Eight months...	307,623	1 003,642	1,051,905	2,802,915

Thus for the eight months 696,019 (69% per cent.) less acres were sold than last year, for \$1,751,010 (62% per cent.) less money. The average per acre this year was \$3.42.

Vermilion Lake & Lake Superior.—The extension of this road from its present lake terminus at Two Harbors southwestward along Lake Superior to Duluth, with the ore docks at Duluth, are to be completed by the close of navigation. The ore shipments this season have kept the rolling stock fully employed and a large additional number of cars is ordered.

Verdigris Valley, Independence & Western.—The track has been extended from Yates Centre southward 50 miles to Independence, Kan., making the road 57 miles long, from Leroy to Independence. It is about 18 miles west of the Southern Kansas road at Leroy, and 9 miles at Independence, the latter place being within 15 miles of the south line of Kansas. The stations south of Yates Centre are Buffalo, Guilford, Altoona, Newdesha, Larrimore and Independence.

Wabash, St. Louis & Pacific.—In the United States Court at St. Louis, Sept. 22, in the case of the Central Trust Co., of New York, and James Cheney, Trustees, against this company, the Court ordered the plaintiff to deliver to the pur-

chasing Committee the three several deeds to the property purchased as well as to deliver to the person all interests as trustees and mortgages to the property sold by the Committee. It was also ordered that from any surplus in their hands arising from the operation of the property in their charge, over and above necessary operating expenses, the receivers are authorized to pay coupons on bonds secured by mortgages superior in right to the mortgages foreclosed. It was further ordered that in case the purchasers of the sale shall become possessed, by purchase or otherwise, of any claim against the property in charge of the receivers, they shall be substituted to the rights of the original holders of the claims.

West Side & Mendocino.—This new California company purposes to build a railroad from the Northern Railroad at Colusa northwest to Round Valley, Mendocino Co., about 75 miles.

Wichita, Cedarville & Southwestern.—This new Kansas company is chartered to build a railroad from Wichita southeastward about 80 miles across Sedgewick, Butler, Cowley and Chautauque counties. Capital stock, \$1,500,000.

Wilmington & Weldon.—On the Wilson cut-off regular trains began running over the road Sept. 9, from Wilson southwest to Benson's, 14 miles beyond Smithfield, N. C. They are to run through to Fayetteville about Oct. 1.

ANNUAL REPORTS

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Northern Pacific.

The system of railroads which this company works included 2,808.31 miles at the close of its fiscal year, June 30, it having added during the year 60.6 miles to the Cascade Division by construction, and having leased the James River Valley Railroad, 49 miles, and the extension of the Jamestown & Northern Railroad, 25½ miles, in Dakota, and the extension of the St. Paul & Northern Pacific, 10 miles, from Minneapolis to St. Paul, giving up the use of the Manitoba tracks between those cities. The system at the close of the year consisted of a main line from Ashland, Wis. to Wallula Junction, Wash., 1,789.1 miles, owned; a line from Portland, Ore., north 143.2 miles to Tacoma, owned; 50 miles of the Cascade Division completed on the Puget Sound end, and 127½ on the Columbia River end, owned; a half interest in 23.18 miles from Duluth to Northern Pacific junction, and a branch of 7.2 miles from Duluth to Superior, —2,090.18 miles owned, directly; 7 miles of the Puget Sound Shore and 10.4 of the Northern Pacific & Cascade, the whole of whose stock is owned by the Northern Pacific; the leased line from Brainerd to Minneapolis and St. Paul, 138.38 miles, with 10.2 miles of branches in those cities; and 552.15 miles in eight leased branches, 164 miles of which are in Minnesota, 316½ in Dakota and 71½ in Montana.

The equipment at the close of the last two years was:

1886.	1885.	1886.	1885.
Locomotives..... 386	391	Box cars..... 4,787	4,608
Passenger cars..... 112	114	Refrigerators..... 71	71
Chair cars..... 2	2	Beer..... 46	46
Emigrant sleepers..... 35	35	Fruit..... 15	4
Dining..... 13	13	Stock..... 809	789
Baggage, mail and express..... 89	87	Flat..... 2,595	2,631
Business and officers..... 14	14	Coal..... 604	693
		Service..... 261	201

also, a half-interest in 23 sleeping cars both years. The company also owns three steamers. It will be seen that there

was a small decrease in locomotives and passenger train cars, an addition of 11 fruit, 46 refrigerator and 20 stock cars, but a reduction of 41 box and 35 coal cars.

The balance sheet shows:

Assets:	
Railroad, telegraph, equipment and lands.....	\$150,000,000
Stocks and bonds.....	2,055,000
Sinking funds.....	654,849
Accounts receivable.....	2,515,447
Supplies on hand.....	1,171,370
Deferred payments on land sales.....	2,670,304
Proceeds of land sales to be applied to sinking fund.....	208,097
Cash.....	2,330,240
	\$169,202,794
Liabilities:	
Common stock.....	\$40,500,000
Preferred stock.....	38,058,311
	\$78,558,311
First-mortgage bonds.....	\$40,379,500
Second-mortgage bonds.....	18,857,000
Dividend certificates.....	4,040,821
	79,877,321
Accrued interest.....	\$1,882,302
Bills and accounts payable.....	3,077,100
Surplus account.....	24,185
Sales of land covered by first mortgage.....	1,256,976
Earnings invested in equipment.....	2,205,249
Sinking funds.....	618,194
Profit and loss.....	203,160
	\$9,207,162
	\$169,202,794

The company is also liable for the interest on the following bonds of leased properties:

Bonds of branches, interest and sinking funds guaranteed by Northern Pacific.....	\$10,798,000
St. P. & N. Pac. bonds, interest guaranteed.....	5,938,600
N. Pac. terminal bonds, interest guaranteed.....	2,838,000

Of the amount due the company for land, \$1,250,065 is applicable to the retirement of the preferred stock, \$260,845 to the Missouri Division bonds, \$1,178,767 to the Pend d'Oreille bonds, and \$982,526 to the sinking fund of the general first mortgage.

The changes during the year consist chiefly in an increase of \$1,520,000 in the cost of the railroad property, of \$370,400 in the cash applicable only to retiring bonds, \$221,500 to the amounts in sinking funds, and of \$445,400 in the deferred dues for lands, with a decrease of \$235,000 in the supplies on hand.

The changes in the liabilities consist chiefly in a decrease of \$552,273 in the preferred stock (received for land) and increase of \$625,000 in the first mortgage, and of a decrease of \$122,000 in the Pend d'Oreille and Missouri Division bonds; an increase of \$187,573 in the bills and accounts payable. Also the whole entry of sales of land covered by general first mortgage.

The traffic for the last two years has been:

<i>Train miles:</i>	1885-86.	1884-85.	Inc. or Dec.	P. c.	
Passengers.....	2,250,456	2,054,722	I.	191.734	
Freight.....	3,231,946	2,838,017	I.	293.029	
<i>Passengers:</i>					
No. east local.....	328,594	297,887	I.	30.707	
No. west local.....	357,100	296,337	I.	60.783	
No. east through.....	5,807	5,740	I.	67	
" west.....	9,903	9,724	I.	179	
Total.....	701,404	609,688	I.	91.716	
<i>Pass. miles:</i>					
Local, east.....	28,630,834	27,428,756	I.	1,202,078	
Local, west.....	34,634,541	30,000,428	I.	4,634,113	
Through, east.....	10,135,278	10,127,749	I.	7,529	
Through, west.....	17,171,163	17,304,068	D.	133,475	
Total.....	90,571,846	84,861,001	I.	5,710,245	
<i>Tons freight:</i>					
Local, east.....	735,733	555,228	I.	210,475	
Local, west.....	751,627	633,023	I.	118,604	
Through east.....	17,857	13,219	I.	4,638	
Through west.....	29,359	32,213	D.	2,854	
Total.....	1,547,626	1,256,870	I.	290,756	
<i>Ton-miles:</i>					
Local east.....	232,458,268	163,904,589	I.	69,153,679	
Local west.....	156,709,409	120,741,773	I.	35,967,636	
Through east.....	30,847,191	22,753,923	I.	8,093,968	
Through west.....	51,100,277	55,095,022	D.	4,504,745	
<i>Average train load:</i>					
No. passengers.....	41	40	I.	1 2.5	
Tons freight.....	149	138	I.	11 8.0	
The earnings and expenses for three years have been:					
	1885-86.	1884-85.	1883-84		
Freight.....	\$8,189,615	\$7,446,266	\$7,865,367		
Passengers.....	2,897,218	3,075,882	4,237,259		
Mail.....	347,937	411,149	175,593		
Express.....	241,769	246,366	257,843		
Miscellaneous.....	53,968	54,486	67,513		
	\$11,730,527	\$11,234,149	\$12,603,575		
Compared with 1884-85 the changes last year were:					
	Freight.	Passengers.	Mails.	Express	Miscel.
	(Inc.)	(Dec.)	(Dec.)	(Dec.)	(Dec.)
Amount.....	\$743,348	\$178,604	\$63,192	\$4,597	\$51,113
Per cent.....	10.0	5.8	15.4	1.9	5.1
and an increase of \$496,377 in total gross earnings.					

and an increase of \$496,377 in total gross earnings.

The working expenses meanwhile were:

	1885-86.	1884-85.	1883-84.
Conducting trains.....	\$1,682,108	\$1,597,938	\$1,757,256
Motive power.....	1,902,247	1,983,523	2,394,219
Maintenance of cars.....	805,950	573,632	589,517
" " way.....	1,341,496	1,363,196	1,650,555
General expenses.....	387,513	440,511	521,678
Total.....	\$5,919,300	\$5,953,800	\$6,922,25
Taxes.....	230,664	242,701	255,229
Net earnings.....	\$5,574,263	\$5,037,849	\$5,425,821

The changes in expenses last year compared with 1884-85 were:

	Trans. Inc.	Motive power. Dec.	Maintenance of Cars. Inc.	Way. Dec.	General. Dec.
Amount.....	\$89,170	\$81,296	\$32,324	\$21,701	\$52,998
Per cent.....	5.0	4.1	5.6	1.0	12.0

and in the aggregate a decrease of 0.6 per cent. in total working expenses amounting to \$34,500, and an increase in net earnings of \$536,415, or 10.6 per cent.

No account is here taken of income from the land grant, which is not available for other purposes than the retirement of bonds and preferred stock. The net income in cash of the Land Department last year was \$276,975.54, and its receipts in preferred stock were \$552,273.33. The lands east of the Missouri are devoted to retirement of the preferred stock; those in Dakota west of the Missouri to the Missouri Division, bonds; those in Idaho and part of those in Washington to the Pend d'Oreille Division bonds, and the others to the general first mortgage bonds. The land sales for three years have been:

	1883-84.	1884-85.	1885-86.
Wisconsin.....	17,548	15,843	13,395
Minnesota.....	250,853	178,530	124,718
Dakota.....	62,277	68,321	87,830
Idaho.....	340	340	4,334
Oregon.....	5,949	5,949	20,033
Washington.....	147,450	75,574	120,614
Total.....	478,116	344,557	370,925
For.....	\$2,281,893	\$1,692,730	\$1,376,844
Av. per acre.....	\$4.77	\$4.88	\$3.71

The sales in 1881-82 were 451,811 acres and in 1882-83, 761,236. There was less demand last year for the higher priced agricultural lands in Dakota, but a large increase in the sales of grazing lands further west, which are usually sold in tracts of at least a section (640 acres) and at a low price. The average price obtained in Dakota east of the Missouri last year, payable in preferred stock, was \$4.65, but as the stock was procurable at 50 to 60 per cent. of its face, this was not more than \$2.80 in cash, and where cash is required only in Montana was the price (\$2.74) lower than that, being:

	Dakota.	Montana.	Idaho.	Washington.	Oregon.
	\$3.26	\$2.74	\$1.18	\$3.44	\$3.68

The entries of government land within the limits of the company's land grant (the alternate sections) have been:

	1883-84.	1884-85.	1885-86.
2,525,000	1,872,823	1,500,000	

The amount due the company for lands sold was \$3,676,204 at the close of the fiscal year, bearing 7 per cent. interest. The St. Paul & Northern Pacific rental amounted to \$534,640, which exceeded the interest on its bonds by \$176,480; the surplus over from previous years and \$20,838 of other income brought up its surplus to \$662,418, out of which \$300,000 (6 per cent.) was paid in dividends, \$150,025 went to the Northern Pacific as holder of 25,025 shares of the stock.

The branch lines, most of which were built by the Oregon & Transcontinental Co., and all of which are leased, earned:

	1885-86.	1886-87.
Gross earnings.....	\$723,117	\$592,327
Expenses.....	514,320	495,257
Net earnings.....	\$208,797	\$157,072
Interest.....	586,040	352,154
Sinking funds.....	87,570	
Total.....	\$673,650	
Deficit.....	\$464,853	195,082
Earnings of N. P. on traffic from branches.....	1,097,963	824,602

"The advantages of the branches will become more apparent year by year, as the adjacent country is more fully occupied and cultivated."

Other data from the report are as follows:

	1883-84.	1884-85.	1885-86.
Av. miles worked.....	2,332.9	2,495.7	2,718
Per mile:			
Gross earn.....	\$5,403	\$4,501	\$4,316
Expenses.....	3,077	2,482	2,265
Net earn.....	\$2,326	\$2,019	\$2,051
Per pass. train mile:			
Earnings.....	\$2.425	\$1.817	\$1.549
Expenses.....	1.34	1.104	0.948
Net.....	\$1.085	\$0.713	\$0.601
Per freight train mile:			
Earnings.....	2.47	2.624	2.535
Expenses.....	1.36	1.299	1.172
Net.....	\$1.11	\$1.325	\$1.363
Rect. per pass. mile:			
Local.....	3.73 cts.	3.43 cts.	
Through.....	2.46 "	2.07 "	
All.....	3.44 "	3.02 "	
Rect. per ton-mile:			
Local.....	2.01 "	1.85 "	
Through.....	1.24 "	0.87 "	
All.....	1.90 "	1.67 "	
Traffic = movement over whole system daily of:			
No. passengers.....	66	44	45 1/2
Tons freight.....	235	284	243

The following are extracts from the report of President Robert Harris:

CONSTRUCTION.

"At the date of the last report 25 miles of the Cascade Branch on the west side of the mountains, and 40 miles on the east side of the mountains were under construction. These sections have been completed and were accepted by the President of the United States, Nov. 18, 1885, and May 25, 1886, respectively.

"The work of constructing the tunnel, 1.9 miles long, was let Jan. 21, 1886, and is to be completed by the summer of 1888.

"In order to get the advantage of bringing into use the Cascade Branch as early as possible, the work of constructing the 47 miles from the end of the track at Ellensburg to the east end of the tunnel, and from the end of the track on the west side of the mountains to the west end of the tunnel, 27 miles, and also a switchback over the mountains, to be used pending the completion of the tunnel, was let June 1, 1886, and will be completed early in the winter of this year, if unforeseen difficulties do not occur, thus opening the road for business from the Columbia River to Puget Sound more than a year in advance of the completion of the tunnel. The total cost of the 75 1/2 miles, including the tunnel and switchback, will be \$3,500,000. The cost of a temporary switchback over the mountains will be \$235,000.

"The total cost of the Cascade Branch from Pasco on the main line to Tacoma, including the cost of the tunnel, but not including a bridge across the Columbia River, will be \$3,000,000, averaging \$31,620 per mile for the 253 miles. A bridge across the Columbia River will be needed in a few years, and will cost about \$1,000,000.

"The St. Paul & Northern Pacific Railway has been extended from Minneapolis to St. Paul; and several spur lines to the manufacturing establishments in those cities have been constructed.

BRANCH ROADS.

"The James River Valley road, 49 miles, from James town, on the main line, to La Moure, on the Fargo & Southwestern Railroad, one of this company's branch roads, has been leased. This road secures to the Northern Pacific the business of this part of the James River Valley, and by its

extension to a junction with the Chicago & Northwestern Railway, 15 miles (now under construction), provides a direct railway connection between the Southeastern part of Dakota and the capital of the territory, Bismarck, and secures to the main line valuable business which would otherwise be diverted to competing roads.

"The Spokane & Palouse Railway, now under construction, from Marshall, on the main line, to Belmont, 43 miles, has been leased by this company. Under this lease the company secures the business of the very fertile district extending along the line of this road in the foot hills of the Blue Mountains in Washington Territory.

"The capital stock of each of these companies is deposited in trust until the bonds of that company shall be paid, when its entire stock becomes the absolute property of this company free from any charges; meantime, this company has the sole power of voting and receiving dividends thereon.

"The amount of bonds of the James River Valley Railroad Company is \$735,000, being at the rate of \$15,000 per mile; and of the Spokane & Palouse Railway Company is \$688,000, being at the rate of \$16,000 per mile, each at 6 per cent. interest.

"A traffic contract has been made with the Helena & Red Mountain Railroad Company, a short spur, 15 miles long, from the main line at Helena to Rimini, on Ten Mile Creek. This road reaches at Rimini a valuable mining district. In consideration of 51 per cent. of the capital stock of that company, and of other advantages that will accrue to the Northern Pacific Railroad Company, this company agrees to guarantee the payment of the interest on the bonds of that company, amounting to \$235,000, at 6 per cent. interest.

"Arrangements have been made with the Union Pacific Railway Company for the use, by this company jointly with that of the part of the Utah & Northern road between Garrison, on the main line of the Northern Pacific road, and Butte, on the Utah & Northern road, 51 miles, and of the several branch tracks to the mines and smelters in the vicinity of Butte, in all about 15 miles, whereby this company gets direct access to the large business of that important mining centre, on equal terms with the Union Pacific Company. The track between Garrison and Butte has been widened to standard gauge, and the cars of this company commenced running to Butte on August 1, 1886.

"This company, jointly with the Union Pacific, guarantees the payment of interest at 6 per cent. on the valuation of that part of the Utah & Northern road and branches used by both companies, which valuation is to be agreed upon or fixed by arbitration. The importance of the Butte business made a direct connection by this company imperative. By the arrangement that has been made with the Union Pacific Company the interests of both companies are fully served, and each gets all the advantages it could have by a separate road, at one-half the cost of building and maintaining a road for its sole use."

OREGON & TRANSCONTINENTAL COMPANY.

"The claim of the Oregon & Transcontinental Co. against the Northern Pacific Co., by its magnitude rather than by its merits, demands mention in this report.

"In December, 1883, the attention of the Board of Directors of this company was asked by its President, Mr. Henry Villard, to the adjustment of the account of the Oregon & Transcontinental Co., and a committee of the directors was appointed to confer with the officers of the Oregon & Transcontinental Co. on the subject; but it was not until November, 1884, that this company received from the Oregon & Transcontinental Co. a specific statement of its claim, which is as follows:

Loss in sale of Casselton and Pelican branches, and Manitoba Southwestern Colonization Railway:
Casselton Branch..... \$19,873.00
Pelican Branch..... 15,563.07
M. S. W. Col. Railway..... 247,360.00

Commissions on loaned and pledged securities..... \$282,797.06
Commission of 10 per cent. per annum on Oregon & Transcontinental indorsement of the Northern Pacific notes for loan of \$2,500,000, dated May 16, 1882. Paid Nov. 6, 1883, and interest to Sept. 30, 1884..... 1,565,032.37

Commission of 15 per cent. per annum on cash advances aggregating \$1,347,405..... 414,682.88

For amount of expenditures on branches after same had been accepted as completed, and improperly charged to Oregon & Transcontinental Co..... 517,727.55

Telegraph construction on branches..... 800,000.00

Preliminary work on branches not constructed..... 21,058.03

Steel rails, 82,278 tons supplied by Oregon & Transcontinental Co. direct and taken into Northern Pacific stock. Part of this since credited, and balance is in process of adjustment..... 42,318.30

Overcharge in transportation of material, estimated..... 5,091.70

Overcharge on iron rails, based upon the price of \$25 per ton, as arranged by Mr. Villard..... 160,000.00

Material on hand Dec. 31, 1883, was valued at \$160,000. Subsequent credits by Northern Pacific have reduced the amount to..... 326,000.00

..... 92,438.41

..... \$4,227,146.30

"Repeated efforts were made on the part of this company to procure an adjustment or settlement of these claims. It is proper to state at this point that the Northern Pacific Co. has a claim against the Oregon & Transcontinental Co. for \$808,616.67 for labor and material furnished that company which stands on the books of this company as an item of accounts receivable. Finding that no adjustment could be arrived at, your board directed that suit should be brought against the Oregon & Transcontinental Co. for the claim of this company against that company, which was accordingly done and that suit is now pending in the United States Circuit Court for the Southern District of New York. After the bringing of this suit it was thought that still further efforts should be made to arrive at a settlement with the Oregon & Transcontinental Co., and accordingly a new special committee was appointed for the purpose of examining into the counter claims and of arriving at some settlement of those claims if possible. That committee has given the subject a thorough and exhaustive examination, and have had the account between the two companies stated, showing what they believe to be the principles upon which the account should be settled. Making full and liberal allowances to the Oregon & Transcontinental Co. for all that the committee believe that company could, under any state of facts, be entitled to, the committee have come to the conclusion that the Oregon & Transcontinental Co. is indebted to the Northern Pacific Co. in the sum of over \$700,000."

SALE OF LANDS EAST OF THE MISSOURI.

"Last spring negotiations were entered upon with certain parties, who proposed to purchase from the company all its lands remaining unsold in Dakota Territory, east of the Missouri River, and who undertook to form a corporation to take the title to the lands, in case the sale was effected, and to manage, sell and dispose of them, with a view to their development and settlement, and also the settlement of the adjoining government sections, as rapidly as practicable. It is part of their plan, through agencies and extensive advertising, to bring in colonists and other settlers, and, when necessary, to extend aid to settlers, in the breaking and preparing of the lands for cultivation, until the returns from their crops shall leave them independent of

assistance. The negotiations were concluded, and a contract was executed July 22 last, for the sale of these lands, estimated to be 2,430,000 acres. The price agreed on is \$3 per acre, in the preferred stock of the company, and payments are to be made as fast as lists certified to the company, under its grant, by the United States and officers, are furnished to the purchasers. * * *

"The purchasers, through the unhampered agencies they are at liberty to employ, will be able to accomplish much more for the development and settlement of the country than this country, with its limited power, possibly can do; and the benefits expected to arise therefrom to the traffic and operation of the road, seem to render the sale, on that account alone, highly advantageous."

After discussing the attempts at legislation in Congress to forfeit large parts of the company's land grant, President Harris says:

"The directors have not believed that any attempt to hinder the building of the road by efforts to take away lands granted for that purpose would prove successful, and have therefore continued to push the road toward completion as rapidly as possible. Although they have been disappointed by the agitation of the subject in Congress, the directors are still confident that the company and the settlers will be saved from the litigation that would follow an attempt to deprive the company of lands the full legal title to which it has actually earned by construction before any act of resumption or declaration of forfeiture is passed or made. That such resumption or forfeiture would be declared illegal and void by the courts there can be no doubt.

"With the development of the resources of Washington Territory that will follow the completion of the Cascade Branch, and with the continued increase of the business of Dakota and Montana territories that may be reasonably expected, the directors believe that the company will easily be able to meet all its fixed charges and have a surplus for the stockholders."

Union Pacific.

The statement of this company for the half year ending June 30 shows:

	1886	1885	Inc. or Dec.
Gross earnings.....	\$1,606,088	\$1,324,530	I. \$281,558
Operating expenses.....	7,944,706	7,497,482	I. 447,224
Taxes.....	500,000	452,362	I. 47,638
Net earnings.....	3,161,322	3,274,686	D. 113,364
Other incomes.....	1,543,723	466,503	I. 1,077,220
Charges.....	3,689,717	3,784,019	D. 94,302
Balance.....	1,014,329 def.	42,829	I. 1,057,158
U. S. requirements.....	225,001	384,292	D. 159,291
Surplus.....	789,328 def.	427,122	I. 1,216,450

Extensive improvements and additions to the rolling stock are being made. The funded debt June 30, 1886, was \$148,201,343. During the current year \$510,000 United States 3 per cent. bonds held on the sinking fund have been called and redeemed. The interest received on those bonds amount to \$32,478. The amount received, \$510,000, from the redemption, has been invested in United States 4 per cent. bonds. The sinking fund is now \$6,419,352, of which \$263,632 is as yet uninvested.

The following statement gives an outline of what has been accomplished under Mr. Adams' administration as President: Aug. 24, the last remaining note of the company then outstanding was paid. For the first time, it is believed, in its history, the Union Pacific had no notes payable outstanding. Including the amount subsequently ascertained to be due the United States Government under the decision of the Court of Claims of Feb. 2, 1885, the company on June 30, 1884, had outstanding bills and accounts payable to the amount of \$10,664,660.73, properly representing its floating debt. During the two years and six months between June 30, 1884, and Dec. 31, 1886, it is estimated that the sum of \$16,000,000 either has been or will be applied by this company to the extinguishment of floating debt or to construction—chiefly the extension of branch lines. The exact proportion in which this amount was derived from various sources cannot be definitely stated until the close of the year. Meanwhile, it may approximately be said that \$7,000,000 will have been derived from surplus income; \$3,400,000 from the sale of the company's own bonds, chiefly Kansas Pacific consolidated mortgage bonds; and \$6,700,000 from the sale of bonds of auxiliary or branch railroad companies. On the other hand, through the operation of the sinking funds and the land and other trusts, the company's bonds to the amount of \$4,400,000 have been or will be retired. The retirement of the company's bonds since June 30, 1884, will exceed in amount the sales of those bonds by a million dollars. During the period in question, also, over 300 miles of new road either have been or will be completed, and the bridge across the Missouri River at Omaha will have been reconstructed on a new and enlarged plan, adequate to the present and future requirements of traffic. The securities representing this new construction will be included among the assets of the company. The investment account in bonds and stocks of other railroad companies, which was in the neighborhood of \$33,000,000 on June 30, 1884, will, therefore, certainly not be less than that amount at the close of the current year.

It will be noticed that the operating expenses for the first six months of the current year are materially larger than for the corresponding period a year ago. This is due to the unusual amount of repair and renewal work now being done. The company's contracts for steel for the current year cover an aggregate of 60,000 tons, or nearly three times the ordinary annual average; and during the year all iron rails will be removed from the main tracks of the Union Pacific system. Extensive renewals of ties and bridges are also being made, new and larger stations are being built, and the motive power and rolling stock are being increased and improved in efficiency. During the last six months the percentage of operating expenses has, therefore, been materially higher on the Union Pacific system than upon other roads similarly situated, and higher than upon the Union Pacific itself in previous years, and under ordinary circumstances. It will continue to be materially higher during the remaining months of the year, as gross earnings will not be increased to any considerable extent through the carriage of material for the construction of the company's own lines. It has been thought wise to meet this large, exceptional, though necessary, outlay now; the benefit to be derived from it will be experienced hereafter. The outlay during the three months of May, June and July, on account of repairs of locomotives, cars and renewals of rails and bridges, was \$1,235,218. The outlay of the current year for the above accounts during the months named was 47.69 per cent. more than during the same months last year and 85.07 per cent. more than during those months of 1884. The increase of expenses on these and other accounts will probably not be less during the remainder of the year. There were 4,547 miles of road, making a debt of \$32,483.96 per mile. The decrease of debt from June 30, 1884, to June 30, 1886, was \$7,742,071. The company will at the close of the two and a half years ending Dec. 31, 1886, have discharged its floating debt in full; while at the same time it will have decreased its funded debt and not diminished the amount of its investments in the securities of branch or auxiliary railroad companies.